USER'S MANUAL

Omni8c/16c/Omni8p Series
Alarm Annunciators & Serial Displays

Date	Revision	Comments
Sep 1999	1	Initial revision
Feb 2000	2	Revised with corrections for product release
Mar 2000	3	Minor typographical errors corrected
July 2000	4	Updated Modbus Interface related content
July 2000	5	Updated with new timer operation
Sep 2000	6	Updated to reflect latest features of V5.xx software kernel
Oct 2000	7	Include Repeat Output functions and DIT Rev 3 changes.
Dec 2000	8	Various Amendments, Input connections for OV comm,
June 2001	9	Amended Softset DIP setting error. Drawing amendments
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Aug 2003	11	Include Repeat as GA functions and DIT Rev 6 changes.
July 2006	12	Omni8p version added to the manual
Nov 2006	13	Modbus Addressing enhanced from V8.02 firmware.

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SCOPE

This User Manual provides information necessary to install, configure and operate your Omni8c or Omni16c product.

This manual covers the following product Model Numbers:

Model	Description	Picture*
8 Point Remote Logic Units (separate display required)		
C1180	Omni8c Remote Logic Unit Ribbon Header O/P	Figure 1-3
C1181	Omni8c Remote Logic Unit Lamp Driver O/P	Figure 1-3
16 Point Remote Logic Units (separate display required)		
C1478	Omni16c Remote Logic annunciator with Lamp Driver Outputs	Figure 1-4
C1479	Omni16c Remote Logic annunciator with Ribbon Header Outputs	Figure 1-4
C1182	Omni16c Remote Logic Unit in compact housing	Figure 1-3
C1184	Omni16c Serial Input Remote Logic Unit Ribbon Header O/P	Figure 1-3
C1185	Omni16c Serial Input Remote Logic Unit Lamp Driver O/P	Figure 1-3
8 Point Panel Mount Integral Alarm Annunciators		
C1490B	Omni8c annunciator with backlit LED display	Figure 1-1
C1491B	Omni8c annunciator with sidebar LED display	-
C1492B	Omni8c annunciator with incandescent lamp display	Figure 1-1
C1493B	Omni8c serial input annunciator with backlit LED display	Figure 1-1
C1494B	Omni8c serial input annunciator with sidebar LED display	-
C1495B	Omni8c serial input annunciator with incandescent lamp display	Figure 1-5
C1427A	Omni8P Backlit LED annunciator with integral pushbuttons and audible	Figure 1-5
C1428A	Omni8P Sidebar LED annunciator with integral pushbuttons and audible	-
C1429A	Omni8P Incandescent lamp annunciator with integral p/buttons & audible	Figure 1-5
16 Point Panel Mount Integral Alarm Annunciators		
C1480B	Omni16c annunciator with backlit LED display	Figure 1-2
C1481B	Omni16c annunciator with sidebar LED display	-
C1482B	Omni16c annunciator with incandescent lamp display	Figure 1-2
C1483B	Omni16c serial input annunciator with backlit LED display	Figure 1-2
C1484B	Omni16c serial input annunciator with sidebar LED display	-
C1485B	Omni16c serial input annunciator with incandescent lamp display	Figure 1-2

* Pictures are for reference only. Some details may change between models.

Introduction

The OMNIFLEX OMNI8/16c family is a range of compact, highly flexible, full function integral alarm Annunciators and displays designed to fulfil all the requirements of the modern industrial plant.

Alarm Annunciators are a key component in the safety of the plant, and these products have been designed with safety integrity in mind. Continuous advanced internal self testing creates a product suitable for use in IEC61508 SIL1 applications.

All products in the range are available "off-the-shelf" with no factory customisation required. Because these units are not built to order, spares holding and maintenance are significantly enhanced. Standard 8 and 16 point modules allow integral systems from 8 to 256 points to be constructed by the user.

Panel mounted display options include long-life incandescent lamps, high-bright back-lit LED's and the unique "side-bar" LED system pioneered by OMNIFLEX.

Display legends for the backlit displays are created by the user on any standard laser/inkjet printer using software templates supplied with the product.

All popular configuration options are accomplished by switch settings on the rear of the unit. Software programming can be used to select more advanced options.

Available in a range of power supply options, these rugged products are designed to fit directly into local electrical panels without the need for external power conditioning or interfacing for the lowest cost system implementation.

Additional options include:
- Integral control pushbutton station to minimise installation space and cost.
- Fully isolated RS232/422/485 Modbus[©] compatible serial port to interface to PLC, DCS, or SCADA systems.
- Internal input repeat relays to minimise field wiring when also connecting inputs to other systems.
- A Software Configuration Utility for more advanced customisation.

This manual covers all of the products listed on page 3, but not all features described in this manual are necessarily available on the product you have purchased. See section 1.3 for details of these options.

Figure 1-1   The Omni8c Panel Mount 8 point Alarm Annunciator/Display.

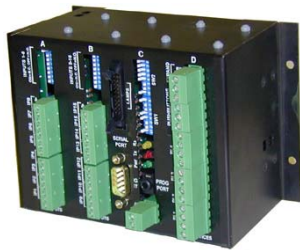*Figure 1-2   The Omni16c 16 point Panel Mount Alarm Annunciator/Display.*

Figure 1-3   The Omni8c Remote Logic Unit

Figure 1-4   The Omni16c Remote Logic Unit

Figure 1-5   The Omni8p Panel Mount 8 point Alarm Annunciator with integral controls

Table of Contents

1. GENERAL DESCRIPTION

1.1 Standard Features

- Standard 8 and 16 point modules allow systems from 8 to 256 alarm points to be constructed by the user.
- Integral or Remote Alarm Logic for maximum flexibility.
- 8 points of alarm/display in 120mm high by 144mm wide size modules to minimise panel space. (16 point module is 120mm x 288mm wide)
- All products in the range are supplied off-the-shelf with no factory customisation required, minimising spares holding.
- Panel mounted display options include long-life incandescent lamps, high-bright back-lit LED's and the unique "side-bar" LED system pioneered by OMNIFLEX.
- User-created display legends on standard laser/inkjet printer using software templates supplied – no window engraving required.
- Relay outputs for common group alarm and external audible device control.
- Integral hardware watchdog relay for safety critical applications.
- Removable terminals for easy installation and maintenance.
- Wetting voltage supplied to the inputs to allow potential free input contacts to be directly connected.
- Switch selectable Normally Open or Normally Closed input contact sense selection while installed. No dismantling required.
- 27 switch selectable alarm sequences built in covering most alarm annunciator specifications and configurations.
- 24Volt dc powered (Some models also available in 85-264Vac options).

1.2 Options available

- Integral power supply for direct connection to 48Vdc or 85-264Vac or dc.
- Internal input repeat relays to minimise field wiring when also connecting inputs to other systems.
- Fully isolated RS232/422/485 Modbus$^{©}$ compatible serial port to interface to PLC, DCS, or SCADA systems.
- Advanced Software Configuration Utility to configure the Omni8/16c in "SOFT-SET" mode for more specialised applications.

1.3 Product Feature Chart

The following feature chart describes the features available in the product you have purchased. Refer to the product descriptions in the SCOPE section at the front of this manual if necessary.

Model	Integral Display	Wall mount	Panel Mount	No. of Alarm/ display Points	Backlit Incand. Display	Backlit LED Display	Sidebar LED Display	No. of Input Contacts	Common Services	Serial Port	Input Repeat Relays	Rem Display/ I/P Repeats	Integral Alarm Logic
C1479	N	Y	N	16	N$_{(1)}$	N	N	16	Y	O	N$_{(3)}$	Y$_{(2)}$	Y
C1480	Y	N	Y	16	N	Y	N	16	Y	O	O	O$_{(3)}$	Y
C1481	Y	N	Y	16	N	N	Y	16	Y	O	O	O$_{(3)}$	Y
C1482	Y	N	Y	16	Y	N	N	16	Y	O	O	O$_{(3)}$	Y
C1483	Y	N	Y	16	N	Y	N	0	O	Y	O	O$_{(3)}$	Y
C1484	Y	N	Y	16	N	N	Y	0	O	Y	O	O$_{(3)}$	Y
C1485	Y	N	Y	16	Y	N	N	0	O	Y	O	O$_{(3)}$	Y
C1490	Y	N	Y	8	N	Y	N	8	Y	O	O	O$_{(3)}$	Y
C1491	Y	N	Y	8	N	N	Y	8	Y	O	O	O$_{(3)}$	Y
C1492	Y	N	Y	8	Y	N	N	8	Y	O	O	O$_{(3)}$	Y
C1493	Y	N	Y	8	N	Y	N	0	O	Y	O	O$_{(3)}$	Y
C1494	Y	N	Y	8	N	N	Y	0	O	Y	O	O$_{(3)}$	Y
C1495	Y	N	Y	8	Y	N	N	0	O	Y	O	O$_{(3)}$	Y

NOTES

1. Y = Provided as standard; N = Not available; O = Option ordered separately. [Do not confuse with 0 (zero) in "No. of Input Contacts" column]

2. The Remote Display/Input Repeat Option provides two 20 way ribbon header connectors. One connector provides 16 open collector transistor outputs from the lamp drivers, and the other provides 16 open-collector transistor outputs as input repeat signals. This option should be installed to provide compatibility with the previous Omni16a and Omni16b product ranges.

3. Input Repeat Relays cannot be installed together with the Remote Display/Input Repeat option, which is equipped with open-collector transistor input repeat outputs. These may be connected to an external relay module.

1.4 Front View of 16 point Panel Mount Units showing Display Layout

1	2	3	4
5	6	7	8
9	10	11	12
13	14	15	16

Optional Pushbutton Station
inserted in this position
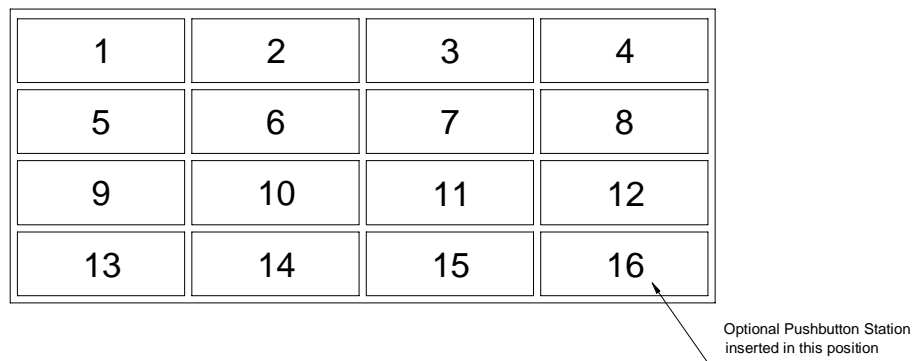
Figure 1-1 – Panel Mount Omni16c Front View showing Window Numbers

1.5 Front View of Omni8C Panel Mount Units showing Display Layout

1	2
3	4
5	6
7	8

Optional Pushbutton Station
inserted in this position
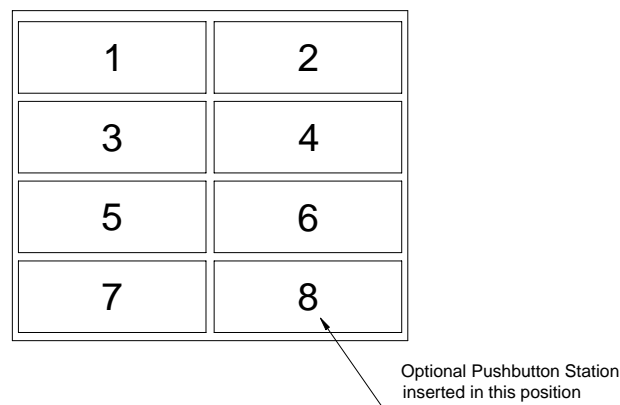
Figure 1-2 – Panel Mount Omni8c Front View showing Window Numbers

1.6 Front View of Omni8P Panel Mount Unit showing Display Layout

1	2	3	4
5	6	7	8
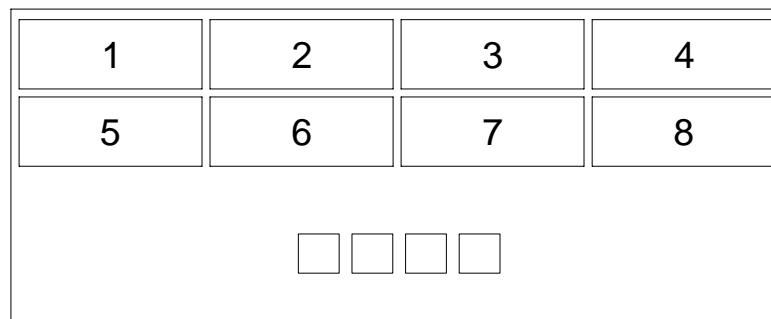
Figure 1-3 – Panel Mount Omni8c Front View showing Window Numbers

1.7 Rear View of Omni16c 16 point units showing Terminal Layout
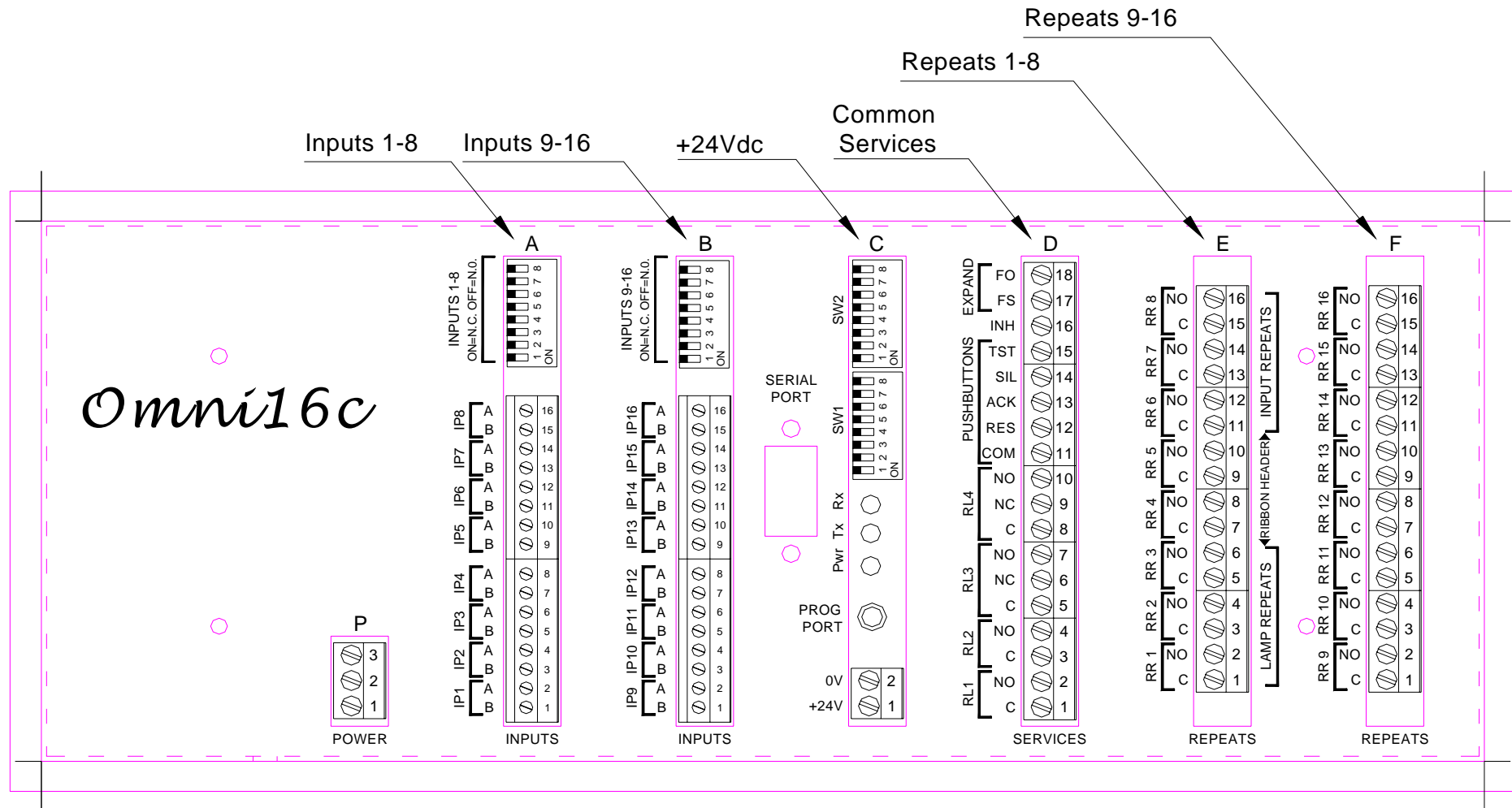
Figure 1-4 – Omni16c Rear View

1.8 Rear View of Omni8c 8 point units showing Terminal Layout
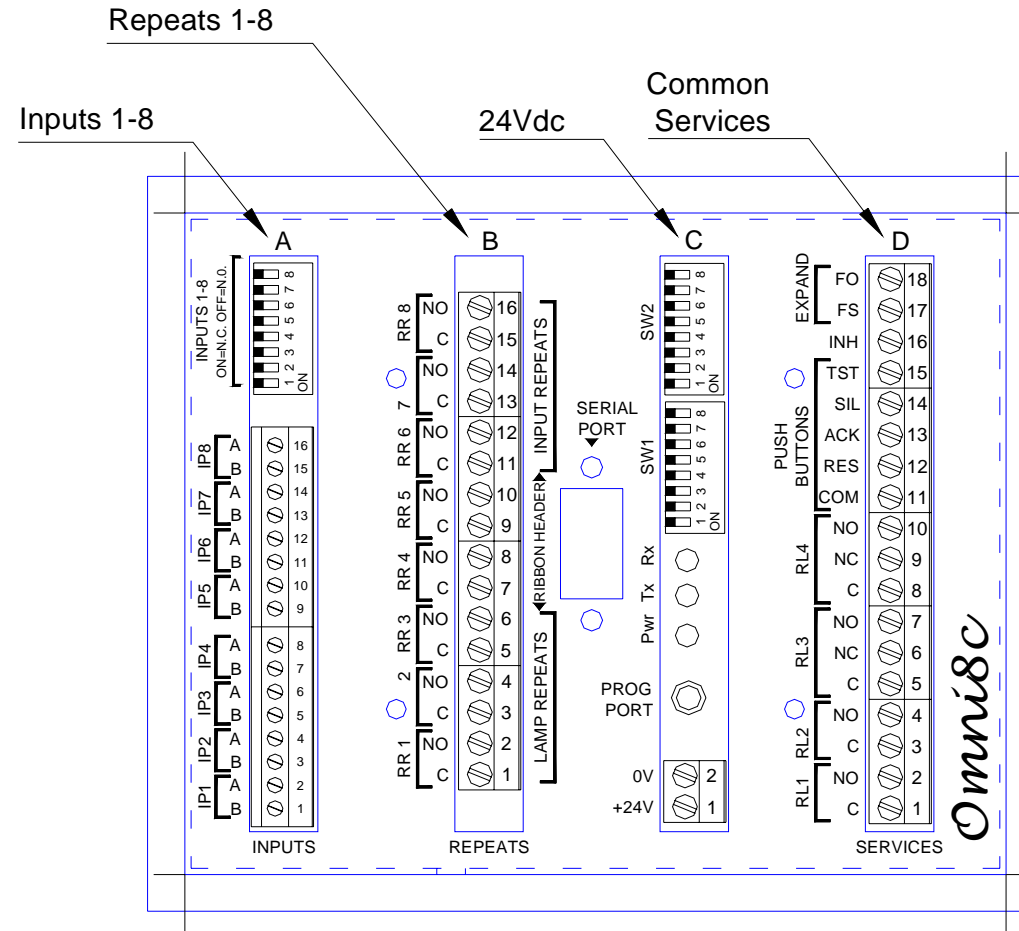
Figure 1-5 – Omni8c Rear View

1.9 Rear View of Omni8P 8 point units showing Terminal Layout

Figure 1-6 – Omni8P Rear View

2. MECHANICAL INSTALLATION

2.1 Panel-mount Mechanical Dimensions
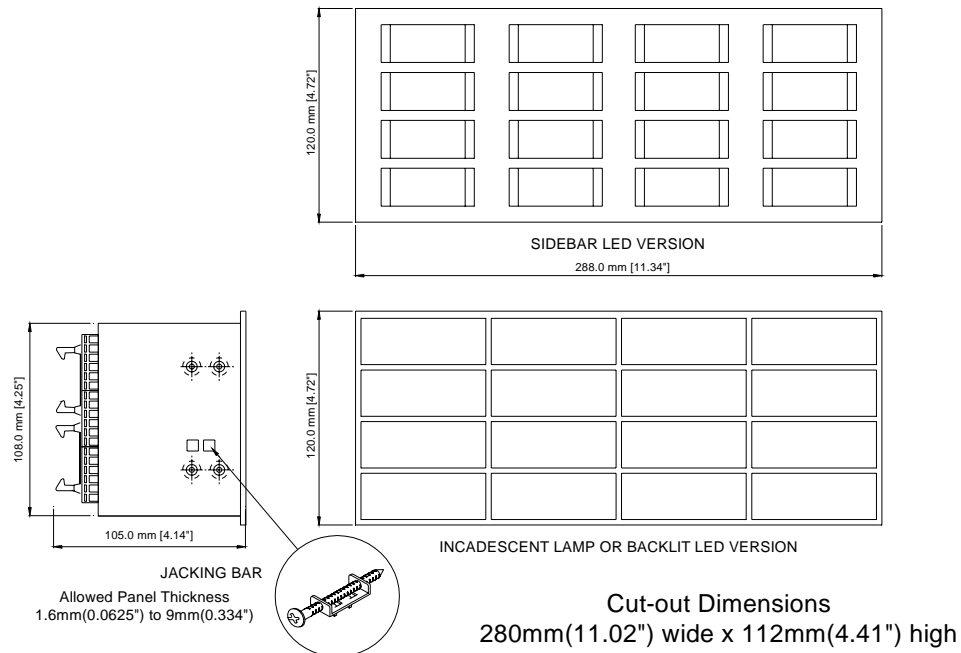
Figure 2-1 –Panel Mount Omni16c and Omni8P Mechanical Dimensions
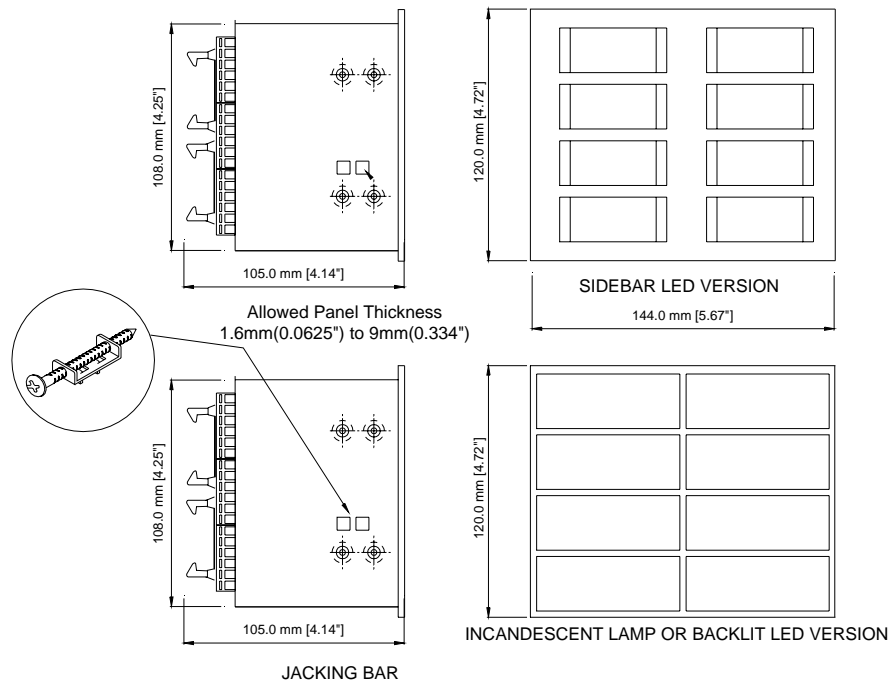
Figure 2-2 –Panel-mount Omni8c Mechanical Dimensions

2.2 Wall-mount Mechanical Dimensions
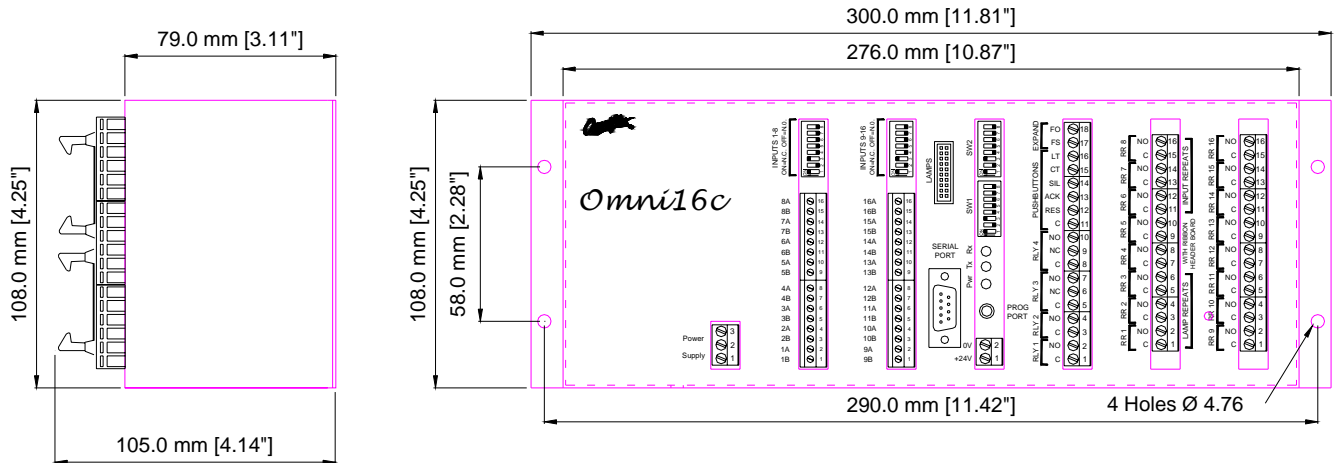
Figure 2-3   Wall-mount Omni16C Standard housing (Models C1478, C1479)
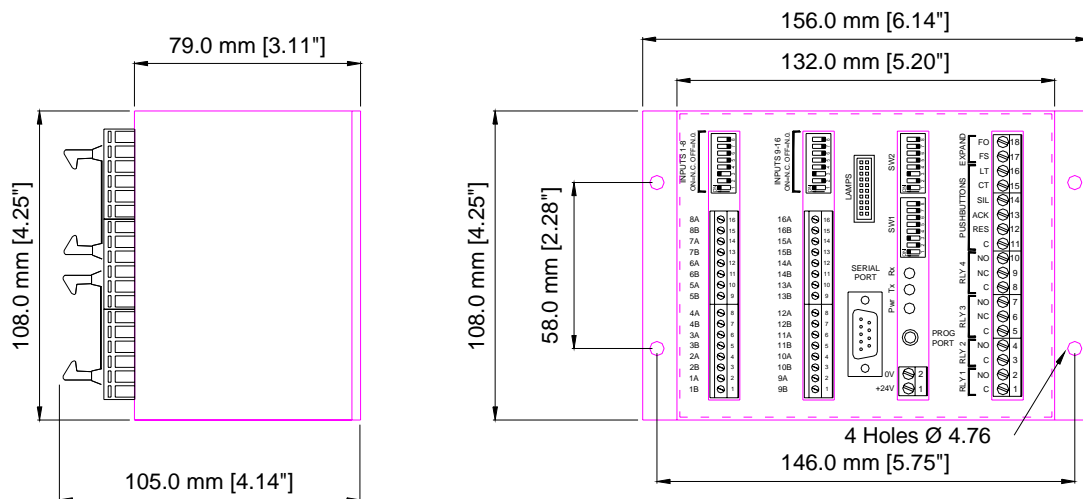
Figure 2-4 Wall-mount Omni8C/16C Compact housing (Models C1180, C1181, C1182, C1184, C1185)

2.3 Introduction to Panel Mounting

The panel mount Omni8/16c may be mounted either as a single unit, or as one of a combination of multiple units stacked together in a single panel cut-out.

In both single and multiple mounting of units, the securing of the Omni-16c's to the user's panel is effected by using "jacking bars" supplied with the Omni16c.

These jacking bars fit into slots set in the top, bottom and sides of the Omni8/16c. The location of these slots is shown in Fig 2-1.

Generally the use of 2 jacking bars on the top and two jacking bars on the bottom is sufficient securing for unit in the panel, but this may vary from panel to panel.

To ensure secure operation of the jacking bars, the user's panel thickness should fall between 1,6 mm (0,0625") and 9,0 mm (0,354").
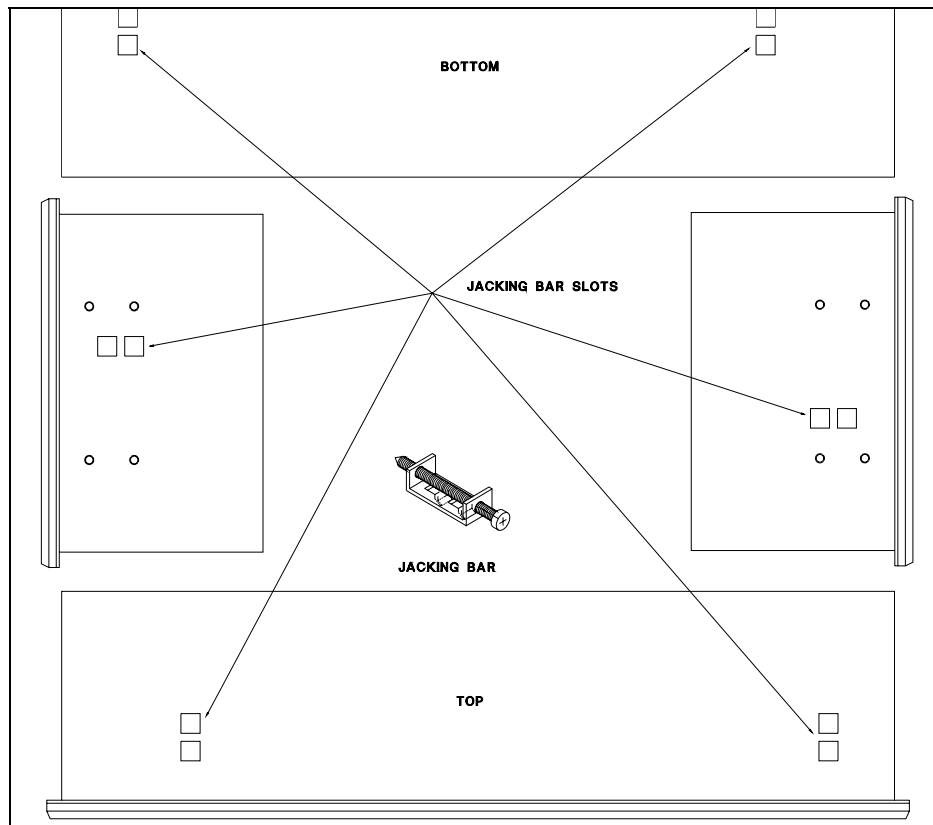
Figure 2-5 –Jacking Bar location slots

2.4 Panel Mounting multiple Units in a single cut-out

2.4.1 Mounting Procedure

Up to 16 Omni8/16c units may be electrically connected together to form a display/annunciator system of up to 256 points. These units may be mounted in the same panel cut-out as follows:

1. Fasten together the multiple units into individual columns of the required height using the optional Mounting Bar Kits (available separately – see section 2.4.4).
   Up to 4 Omni8c's or Omni16c's may be stacked together into a single column, as shown in Figure 2-6 Vertical Stacking Arrangement. Omni8c's and Omni16c's may not be mixed in the same vertical stack.

2. Mount the pre-assembled vertical stacks of Omni8/16c's side-by-side in the panel cut-out by using 4 jacking bars per stack, as shown in Figure 2-6 Vertical Stacking Arrangement.
   (Apart from the panel itself, there is no mechanical connection between these vertical stacks).
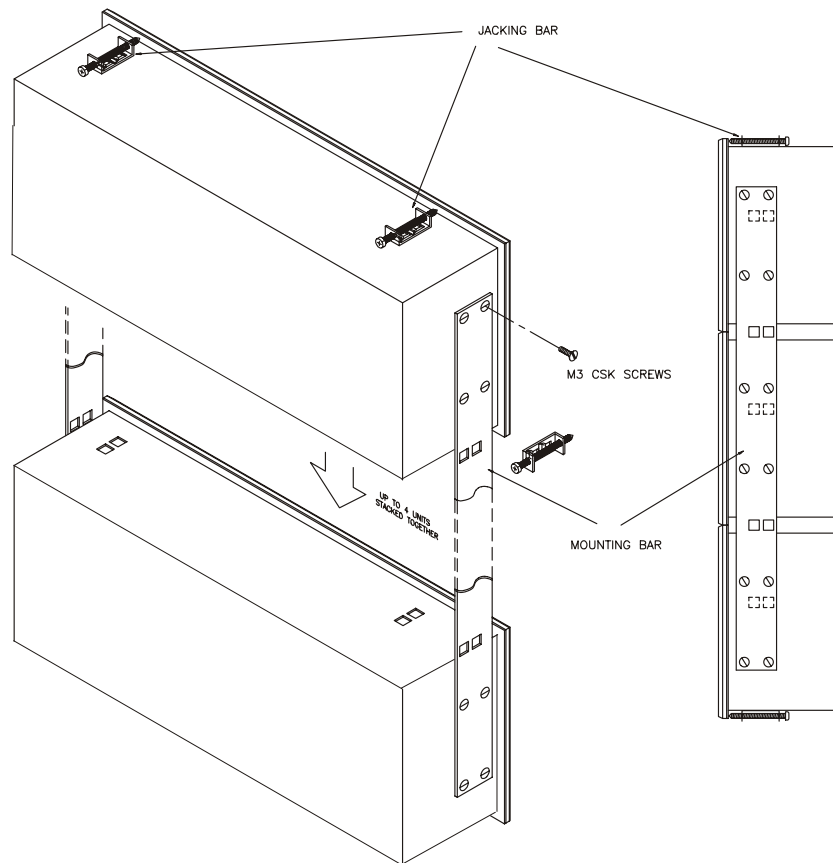
Figure 2-6 Vertical Stacking Arrangement.

2.4.2 Multiple Unit Cut-Out Size

For multiple units mounted in a single cut-out, the following formula can be used to calculate the cut- out size:

Cut-out Height = (N x 120) – 8 (mm)

N = number of units high

Cut-out Width = (N_8 x 144) + (N_{16} x 288) – 6 (mm)

N_8 = Number of Omni8c stacks wide

N_{16} = Number of Omni16c stacks wide (including Omni8P)

2.4.3 Example Cut-out Size Calculation

For example, to make a single system of 48 points – 8 windows high by 6 windows wide, requires two Omni8c's (mounted vertically in a two high stack) and two Omni16c's (mounted vertically in a two high stack). The two stacks of two annunciators are mounted side by side in the same panel cut-out.

The cut-out height would be 2 x 120 – 8 = 232 mm

The cut-out width would be (1 x 144) + (1 x 288) – 6 = 426 mm

2.4.4 Mounting Bar Kits

A range of Mounting Bar Kits is available for constructing vertical stacks of 2, 3 or 4 units in height. Each kit consists of 2 mounting bars of the appropriate size, complete with all the necessary screws and washers to form a single column of Omni8/16c's. These kits may be ordered using the following Order Code numbers:

Column Size	Order Code
2 High Mounting Bar Kit	C1431-01
3 High Mounting Bar Kit	C1431-02
4 High Mounting Bar Kit	C1431-03

Table 2-1 Mounting Bar Kit Ordering Information

2.5 Mounting a single Omni8/16c in a panel cut-out

The panel cut-out required to mount a single Omni8/16c is given in the following table:

	Height	Width
Omni16c	112mm(4.41")	280mm(11.02")
Omni8c	112mm(4.41")	136mm(5.35")

Table 2-2 Single Unit Mounting Cut-out Dimensions

2.6 Installing the Internal Pushbutton Station

The control pushbuttons required to manage the alarm sequences selected in the Omni8/16c may be located internal or external to the Omni8/16c.
If mounted externally, then they must be wired to the terminals on the rear of the unit. See Section 3.11 for further details.
The control pushbuttons may be mounted internal to the Omni8/16c using the optional Integral Pushbutton Station (Model Number C1420).
This Internal Pushbutton Station is installed in window position 8 in the Omni8c and In window position 16 in the Omni16c (the right hand bottom corner in each case.)
This window position is then no longer available as a display point (although the internal logic remains fully operational).
To install the Internal Pushbutton Station follow this procedure:
1. Snap out the right hand bottom window.
2. Plug in the Integral Pushbutton Station into the connector visible through the window.
3. Snap the Integral Pushbutton Station into position.

| *Plugging in PBS* | *After plugging in* | *Complete* |

2.7 Installing Back-lit LED boards

To install Back-lit LED Boards follow this procedure:
1. Snap out the relevant clear plastic window.
2. Remove any lamps that may already be installed. (Backlit LED boards can be installed in units that have incandescent lamp holders installed, but only after the bulbs have been removed.)
3. Using a pair of long-nose pliers, grip the backlit LED board by the central connector, and carefully insert on to the gold pins located in the centre of the window.
4. Press the board firmly into position so that the white locating spacer clips into the locating hole in the back of the window.

Markings on the LED board indicate the correct insertion orientation. If an LED board is inserted the wrong way around, it will not work, but no damage will be done.

- Caution: We recommend that power to the Omni is SWITCHED OFF before insertion/removal of LED boards to prevent damage to the unit.

2.8 Creating Window Legends for Back-lit Display Windows

2.8.1 Overview

Legends are created for the Omni8/16c on a laser or inkjet printer using the software templates provided with the product.

Templates for popular programs are supplied on a 3,5" 'stiffy' diskette with your panel-mount Omni8/16c. There are templates for Microsoft Word and Microsoft PowerPoint to run on an IBM compatible computer running the Windows95, Windows 98 or Windows NT operating systems. There is also a README.TXT file on this disk. Read this first to see which versions of program are compatible with these templates.

2.8.2 Creating the Legend Film

To create the legend film, follow this procedure:

1. Start the application program you wish to use.
2. Open the appropriate template from the 'stiffy diskette' supplied.
3. Fill in your legend details in this template.
4. Print the legends created onto overhead transparency film (the type used for overhead presentations). A sheet is included with the product.
5. Cut along the cut marks which will print onto the film to produce the number of individual legends required.
6. Insert them into the Omni8/16c as described in section 2.9.

Please note that the supplied templates have been tested on a wide range of printers. Your particular printer may scale the image slightly differently. While the front grid markings should accommodate this tolerance, in exceptional circumstances you may have to alter the grid spacing on the template supplied. This needs to be done once only and will then be set for your printer.

The correct size for each legend film insert is 21.5mm high x 60mm wide.

2.9 Inserting Legends and Colour Filters into Back-lit Display Windows

2.9.1 Colour of Windows

If Back-lit LED lamps are used, then the colour of the window is set by the coice of LED lamps, and no additional colour filters are required.

If incandescent lamps are used, then these always give a white light and if a coloured window is required, a colour filter needs to be inserted into the window.

These coloured filters are provided in a kit of assorted colours supplied with the product.

Each kit of coloured filters contains the following:

C1463 Colour Filter Kit Contents
16 Red Filters
16 Yellow Filters
16 Green Filters
4 Blue Filters

Additional Colour Filter Kits may be ordered as desired by quoting Model Number C1463.

2.9.2 Assembling Back-lit Display Windows

Assemble back-lit windows into the Omni8/16c as follows:

1. Assemble each window as shown in Figure 2-7 Backlit Window Order of Assembly.
2. Snap the assembled window into position in Omni8/16c.

Rough surface this side

Legend Film

Colour Filter (if required)

White Diffusor
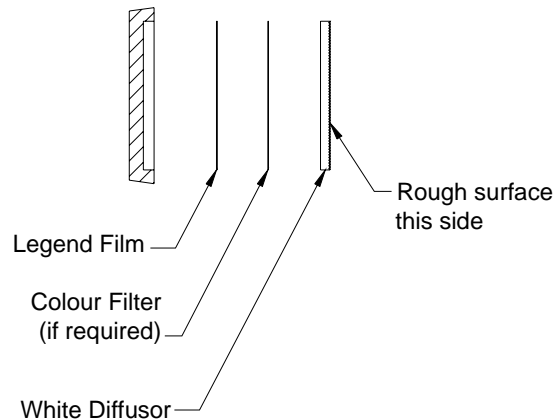
Figure 2-7 Backlit Window Order of Assembly

2.9.3 To remove a Window

Windows may be removed by inserting a screw-driver in the slot provided on the top or bottom of the clear window to lever it gently out.

Step 1	Step 2	Step 3
Using a finger nail in the notch at the top or bottom of the display will remove the window from the display	*A Flatblade screwdriver may also be used if finger access is difficult..*	*Gently lever and twist the screw driver to pop the window from the display supporting both sides of the window*

2.9.4 To refit a window

Step 1	Step 2	Step 3
Line up the window with the display cutout notch. *Note the window is perfectly symmetrical and can be fitted any way round.*	*Insert one side of the window ensuring the window clip is located in the cutout notch.*	*Once located press firmly on the edge of the un-located side of the window with your thumb. Directing your force at an angle along the edge of the window. The window clip will slip into the notch on the metal work easily*

2.10 Creating Window Legends for Side-bar Display Windows.

Side-bar LED versions of the panel-mount Omni8/16c's use engraved coloured plastic windows.

White windows are supplied as standard with the annunciator.

Other colours may be ordered separately.

3. ELECTRICAL INSTALLATION

3.1 Introduction

All electrical connections to the Omni8/16c are made on the rear of the unit on plug-in terminals provided (refer to Figure 1-4 and Figure 1-6).
The following general block diagrams provide an overview of the connections required.
Not all products in the range have all the facilities shown. These connections are described individually in more detail later in this section.

3.2 Omni8c Block Diagram
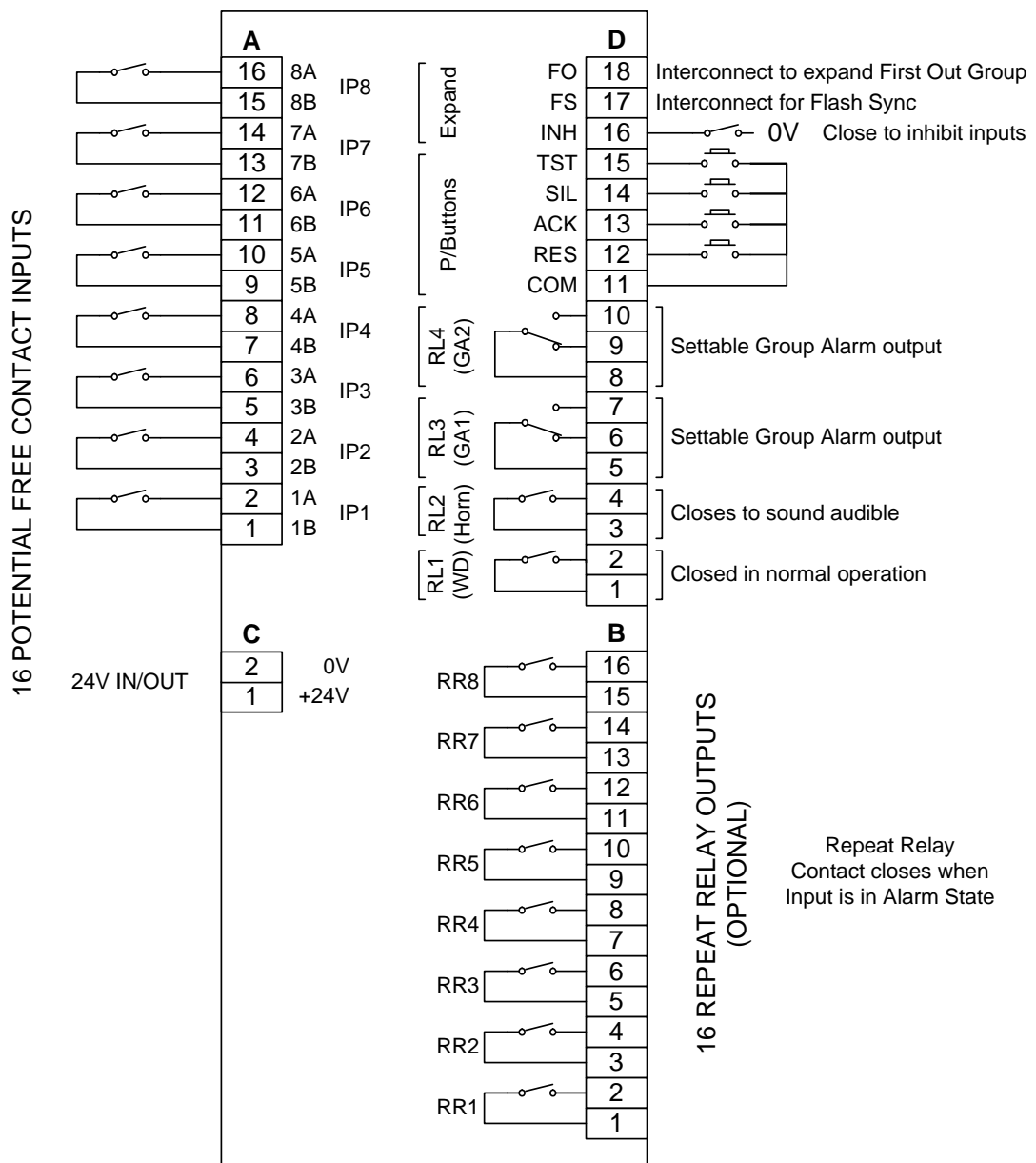
Figure 3-1 –Omni8c Annunciator Block Diagram showing Terminal Numbers

3.3 Omni8P Block Diagram
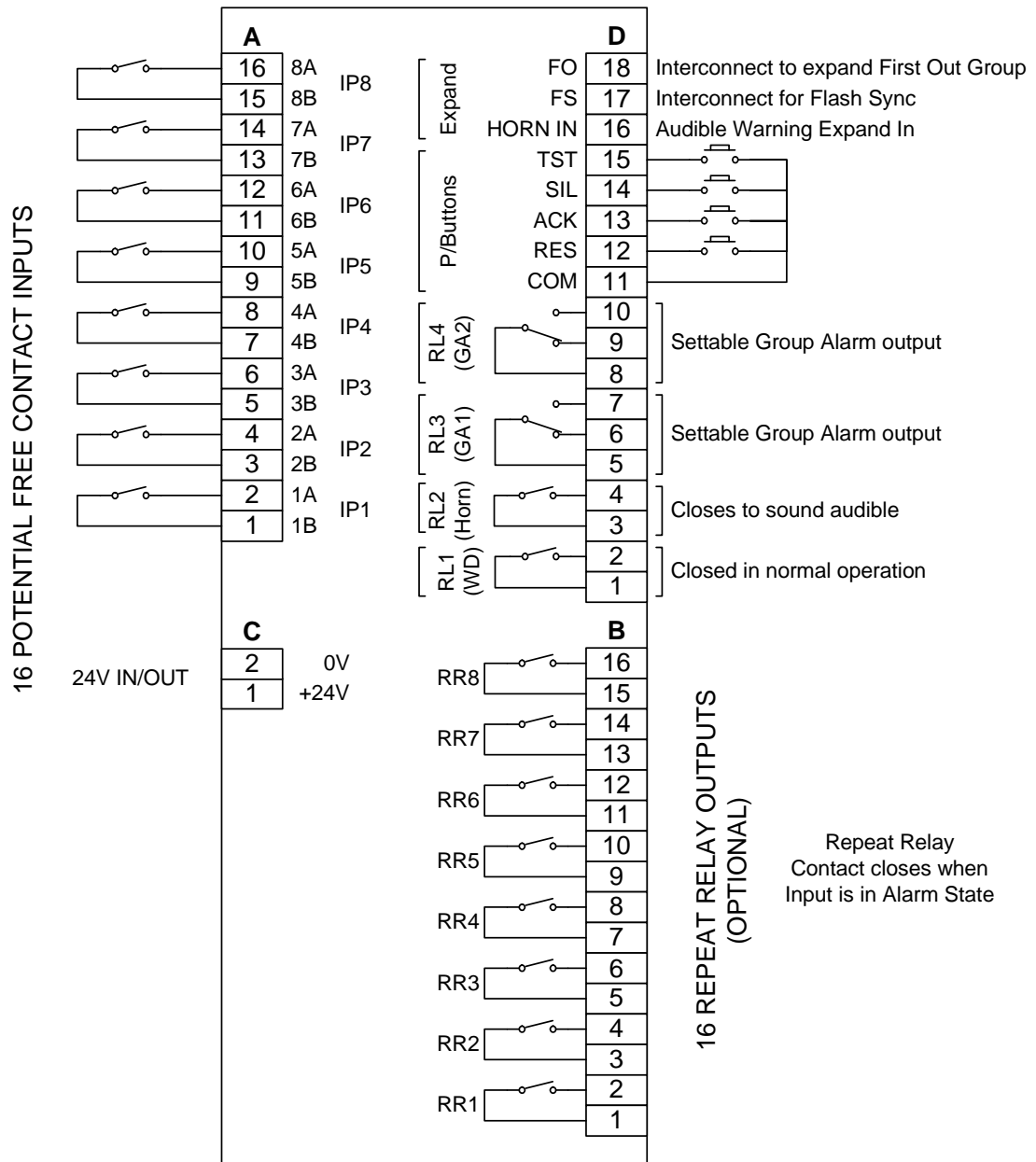
Figure 3-2 –Omni8P Annunciator Block Diagram showing Terminal Numbers

3.4 Omni16c Block Diagram
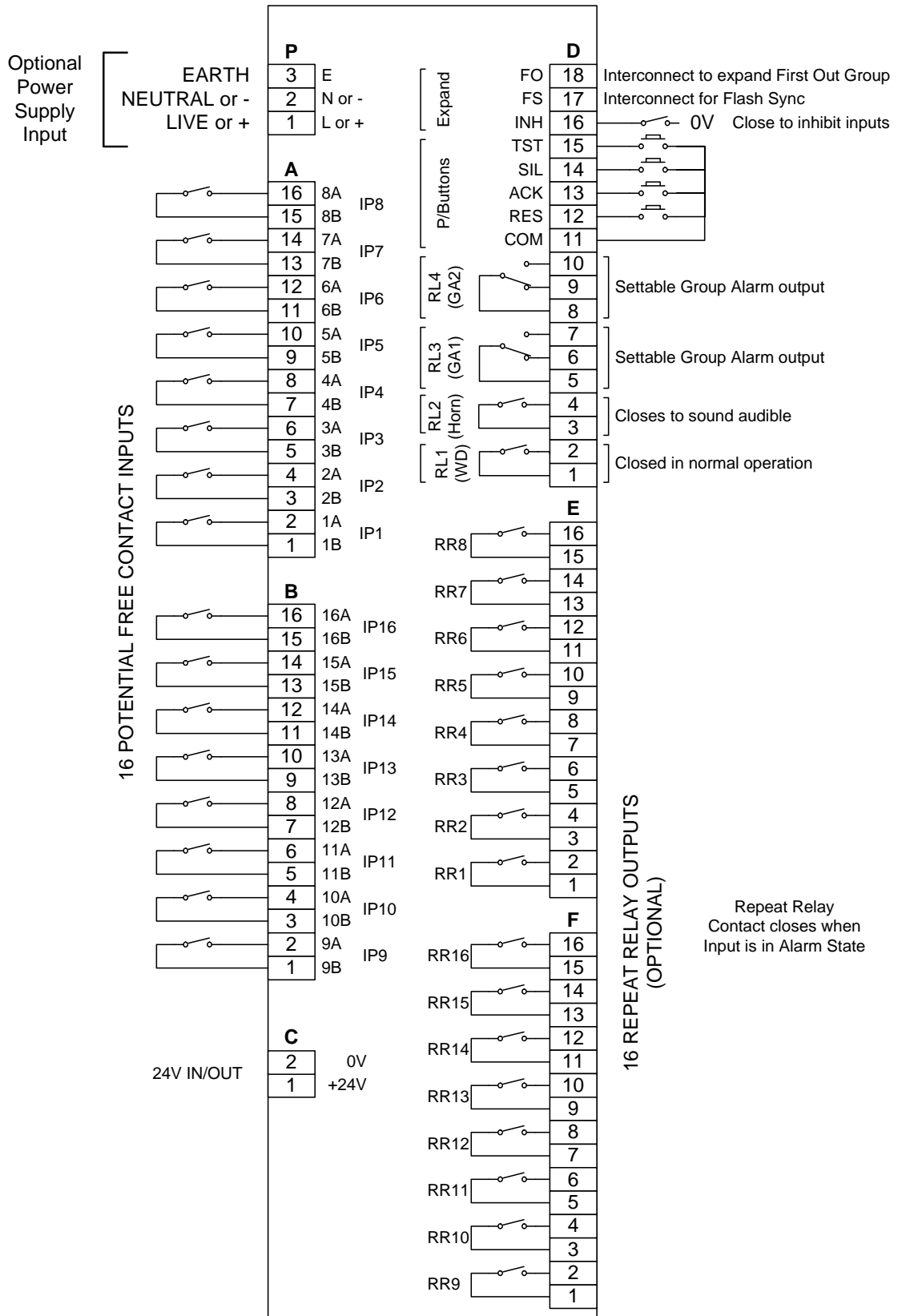
Figure 3-3 – Omni16c Annunciator Block Diagram showing Terminal Numbers

3.5 Omni8/16c Terminal Schedule

Omni16c Terminal Number	Omni8c/8P Terminal Number	Terminal Marking	Description
Optional Power Supply (Omni16c only)			
P-1	-	L / +	Live (ac) or + (dc) power supply connection when optional internal power supply is installed.
P-2	-	N / -	Neutral (ac) or - (dc) power supply connection when optional internal power supply is installed.
P-3	-	E (symbol)	Safety Earth power supply connection when optional internal power supply is installed.
Inputs 1 to 8			
A-1	A-1	IP1 - B	Input 1 Connection (Excitation) – A potential free contact is wired across terminals A and B to activate each input. For other input connection configurations see section 3.9
A-2	A-2	IP1 - A	Input 1 Connection (Active)
A-3	A-3	IP2 - B	Input 2 Connection (Excitation)
A-4	A-4	IP2 - A	Input 2 Connection (Active Input)
A-5	A-5	IP3 - B	Input 3 Connection (Excitation)
A-6	A-6	IP3 - A	Input 3 Connection (Active Input)
A-7	A-7	IP4 - B	Input 4 Connection (Excitation)
A-8	A-8	IP4 - A	Input 4 Connection (Active Input)
A-9	A-9	IP5 - B	Input 5 Connection (Excitation)
A-10	A-10	IP5 - A	Input 5 Connection (Active Input)
A-11	A-11	IP6 - B	Input 6 Connection (Excitation)
A-12	A-12	IP6 - A	Input 6 Connection (Active Input)
A-13	A-13	IP7 - B	Input 7 Connection (Excitation)
A-14	A-14	IP7 - A	Input 7 Connection (Active Input)
A-15	A-15	IP8 - B	Input 8 Connection (Excitation)
A-16	A-16	IP8 - A	Input 8 Connection (Active Input)
Inputs 9 to 16			
B-1	-	IP9 - B	Input 9 Connection (Excitation)
B-2	-	IP9 - A	Input 9 Connection (Active Input)
B-3	-	IP10 - B	Input 10 Connection (Excitation)
B-4	-	IP10 - A	Input 10 Connection (Active Input)
B-5	-	IP11 - B	Input 11 Connection (Excitation)
B-6	-	IP11 - A	Input 11 Connection (Active Input)
B-7	-	IP12 - B	Input 12 Connection (Excitation)
B-8	-	IP12 - A	Input 12 Connection (Active Input)
B-19	-	IP13 - B	Input 13 Connection (Excitation)
B-10	-	IP13 - A	Input 13 Connection (Active Input)
B-11	-	IP14 - B	Input 14 Connection (Excitation)
B-12	-	IP14 - A	Input 14 Connection (Active Input)
B-13	-	IP15 - B	Input 15 Connection (Excitation)
B-14	-	IP15 - A	Input 15 Connection (Active Input)
B-15	-	IP16 - B	Input 16 Connection (Excitation)
B-16	-	IP16 - A	Input 16 Connection (Active)

24 Volt power			
C-1	C-1	+24V	+24 volt supply to/from the Omni8/16c. If the optional internal supply is fitted to the Omni16c, then 24 volts becomes available here to power external devices.
C-2	C-2	0V	0 volt supply to/from the Omni8/16C.
Common Services Relays			
D-1	D-1	RL1 - C	Common Contact from Relay 1. In "Switch-set" mode this relay acts as a Watchdog output, and is normally energised, making this contact closed in the normal operating mode of the Omni8/16C. On detection of a fault, this relay de-energises, and this contact opens.
D-2	D-2	RL1 - NO	Normally Open Contact from Relay 1
D-3	D-3	RL2 - C	Common Contact from Relay 2. In "Switch-set" mode this relay provides the Horn output, and energises whenever the audible sounds, closing this contact.
D-4	D-4	RL2 - NO	Normally Open Contact from Relay 2
D-5	D-5	RL3 - C	Common Contact from Relay 3. In "Switch-set" mode this relay operates as Group Alarm 1. (see text later for operating options available – refer Section 4.5)
D-6	D-6	RL3 – NC	Normally Closed Contact from Relay 3
D-7	D-7	RL3 – NO	Normally Open Contact from Relay 3
D-8	D-8	RL4 - C	Common Contact from Relay 4. In "Switch-set" mode this relay operates as Group Alarm 2. (see text later for operating options available – refer Section 4.5)
D-9	D-9	RL4 – NC	Normally Closed Contact from Relay 4
D-10	D-10	RL4 – NO	Normally Open Contact from Relay 4
Common Services Pushbuttons			
D-11	D-11	COM	Common Connection for external pushbuttons.
D-12	D-12	RES	Connection to an external Reset pushbutton (or to another Omni8/16C.)
D-13	D-13	ACK	Connection to an external Acknowledge pushbutton (or to another Omni8/16C.)
D-14	D-14	SIL	Connection to an external Silence pushbutton (or to another Omni8/16C.)
D-15	D-15	TST	Connection to an external Test pushbutton (or to another Omni8/16C.)
Common Services Expansion			
D-16	D-16 (Omni8c)	INH	Connection to an external Inhibit contact used to inhibit new alarms from occurring. (Not available on the Omni8P)
D-16	D-16 (Omn8P)	HORN IN	Connect this input to 0Volts to activate the internal Horn in the Omni8P only/
D-17	D-17	FS	Connect to another Omni8/16c to synchronise flashing between units.
D-18	D-18	FO	Connection to another Omni8/16c to create a single First-Out Group across more than one unit.

Inputs 1-8 Repeat Relays			
E-1	B-1	RR1 - C	Input 1 Repeat Relay Common Contact. When Input 1 is in the alarm condition, then this relay is energised, causing the contact to close.
E-2	B-2	RR1 - NO	Input 1 Repeat Relay Normally Open Contact.
E-3	B-3	RR2 - C	Input 2 Repeat Relay contact (Com).
E-4	B-4	RR2 - NO	Input 2 Repeat Relay contact. (NO)
E-5	B-5	RR3 - C	Input 3 Repeat Relay contact (Com).
E-6	B-6	RR3 - NO	Input 3 Repeat Relay contact. (NO)
E-7	B-7	RR4 - C	Input 4 Repeat Relay contact (Com).
E-8	B-8	RR4 - NO	Input 4 Repeat Relay contact. (NO)
E-9	B-9	RR5 - C	Input 5 Repeat Relay contact (Com).
E-10	B-10	RR5 - NO	Input 5 Repeat Relay contact. (NO)
E-11	B-11	RR6 - C	Input 6 Repeat Relay contact (Com).
E-12	B-12	RR6 - NO	Input 6 Repeat Relay contact. (NO)
E-13	B-13	RR7 - C	Input 7 Repeat Relay contact (Com).
E-14	B-14	RR7 - NO	Input 7 Repeat Relay contact. (NO)
E-15	B-15	RR8 - C	Input 8 Repeat Relay contact (Com).
E-16	B-16	RR8 - NO	Input 8 Repeat Relay contact. (NO)
Inputs 9-16 Repeat Relays			
F-1	-	RR9 - C	Input 9 Repeat Relay Common Contact. When Input 9 is in the alarm condition, then this relay is energised, causing the contact to close.
F-2	-	RR9 - NO	Input 9 Repeat Relay Normally Open Contact.
F-3	-	RR10 - C	Input 10 Repeat Relay contact (Com).
F-4	-	RR10 - NO	Input 10 Repeat Relay contact. (NO)
F-5	-	RR11 - C	Input 11 Repeat Relay contact (Com).
F-6	-	RR11 - NO	Input 11 Repeat Relay contact. (NO)
F-7	-	RR12 - C	Input 12 Repeat Relay contact (Com).
F-8	-	RR12 - NO	Input 12 Repeat Relay contact. (NO)
F-9	-	RR13 - C	Input 13 Repeat Relay contact (Com).
F-10	-	RR13 - NO	Input 13 Repeat Relay contact. (NO)
F-11	-	RR14 - C	Input 14 Repeat Relay contact (Com).
F-12	-	RR14 - NO	Input 14 Repeat Relay contact. (NO)
F-13	-	RR15 - C	Input 15 Repeat Relay contact (Com).
F-14	-	RR15 - NO	Input 15 Repeat Relay contact. (NO)
F-15	-	RR16 - C	Input 16 Repeat Relay contact (Com).
F-16	-	RR16 - NO	Input 16 Repeat Relay contact. (NO)

3.6 Omni8/16c Serial Port Pinouts to PC or PLC

The isolated serial port option must be specified separately when ordering your annunciator, and will be factory fitted before delivery.

If fitted with the Serial Port Option the Serial connections are as follows:

Omni-8/16C/8P

DB9 Pin	RS232	RS485
1		RxD+
2	RxD	RxD-
3	TxD	
4		TxD+
5	GND	GND
6	Vcc(iso)	Vcc (iso)
7		
8		
9		TxD-
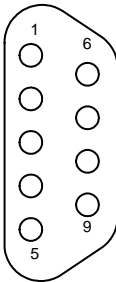
Figure 3-4   RS232/485 Connector Pin-out.

The selection of RS232or RS485 communications is done only by the way that the connector is wired. No other settings or adjustments are necessary.

NB: Once the Serial Port (DB9) Option Board has been fitted the Serial Jack plug facility normally used to configure the annunciator is disabled. Configuration must then be done through the DB9 Serial Port once it is fitted to an Omni8/16C.

3.7 Power Requirements

The standard Omni8/16c is 24Volt dc powered.

The table below gives the maximum current requirement of each of the products in the range.

If any of the options are fitted, then these must be added to the base consumption to determine the total consumption of the product.

Model	Max Current Consumption at 24Volts dc
C1180	0.1 Amps $_{Note1}$
C1181	0.1 Amps $_{Note1}$
C1182A	0.1 Amps $_{Note1}$
C1184	0.1 Amps $_{Note1}$
C1185	0.1 Amps $_{Note1}$
C1478	0.1 Amps $_{Note1}$
C1479B	0.1 Amps $_{Note1}$
C1480B	1.1 Amps
C1481B	0.6 Amps
C1482B	2.0 Amps
C1483B	1.1 Amps
C1484B	0.6 Amps
C1485B	2.0 Amps
C1490B	0.6 Amps
C1491B	0.3 Amps
C1492B	1.1 Amps
C1493B	0.1 Amps
C1494B	0.3 Amps
C1495B	1.0 Amps
Options	
C1425	0.08 Amps $_2$
C1426	0.03 Amps

Table 3-1 Omni8/16c Power Consumption

Note 1: This power consumption excludes the requirements of the remote display used in conjunction with this product.

An optional internal Power Supply may be fitted to the Omni16c. This option allows the unit to be directly powered from higher voltage ac or dc sources. These power supplies generate a galvanically isolated 24Vdc at 2.2Amps maximum to power the Omni8/16c.

The following two options are available:

			DC Option Model C1422 20-60Vdc
Model	Description	Source Voltage	Max Current Requirements
C1421	AC Option	85-264Vac/dc	1.2Arms at 115V 0.6Arms at 230V
C1422	DC Option	20-60Vdc	2.8A at 24Vdc 1.5A at 48Vdc

3.8 Connecting the Power Supply

3.8.1 With no Internal Power Supply Installed. (24Vdc version)

Without an optional internal Power Supply installed, the Omni8/16c is powered from an external 24Vdc supply.

Connect the external 24Volt supply to terminals C-1 and C-2 on the rear of the unit. There is no galvanic isolation provided between the 24Volt supply and the internal logic of the unit.

Terminal	Connection
C - 1	+24Volts +/- 15% (20.4 – 27.6 Volts)
C - 2	0 volts

When power is correctly applied, then the Green "Pwr" indicator on the rear of the unit is lit.

Reverse Polarity Protection

The Omni16c is equipped with reverse polarity protection on these terminals. If the 24Volt supply is connected in reverse, then a momentary short circuit will exist until the internal resettable fuse opens to protect the unit. Once the reverse connections are removed, the unit should be left for approximately 2 minutes without power to allow time for the resettable fuse to reset.

3.8.2 With the Optional Internal Power Supply installed.

With the optional internal Power Supply Installed, 24Vdc is produced inside the unit from the primary supply voltage.

24Vdc is then available as an output on Terminals C-1 and C-2.

Connect the primary supply to the supply terminals P-1, P-2 and P-3.

	AC Option Model C1421 85-264Vac/dc	DC Option Model C1422 20-60Vdc
Terminal	Connection	Connection
P - 1	LIVE or +	+
P - 2	NEUTRAL or -	-
P - 3	Safety Earth	Safety Earth

Reverse Polarity Protection

The Model C1421 AC option will operate with a dc supply connected in either polarity, but the above connections are required to comply with radiated emission standards.

The Model C1422 DC option is reverse polarity protected. Reversing the dc supply will not damage the unit, but it will not function.

3.8.3 24Vdc Power externally available

With either internal power supply option installed, the 24Volt terminals C-1 and C-2 now become a limited source of 24Volt power for use with other devices. For example, a 24 volt dc audible device could be powered by the Omni8/16cfrom these terminals.

Calculate the externally available current from this 24Vdc supply as follows:

1. The maximum current capacity from the optional internal power supply is 2.2Amps at 24Vdc
2. Determine the maximum internal consumption of the Omni8/16c (see section 3.7)
3. The difference between this and 2.2 Amps is the available current.

Example:

A 24 point panel mounted alarm system is required, made up of a backlit LED Omni16c (Model C1480) and a backlit LED Omni8c (Model C1490).

Design Issues:

1. What is the total power requirement of the system?
2. Can an optional C1421 internal ac power supply fitted in the Omni16c power the Omni8c as well?

Solution:

From Table 3-1:

Model	Max Current Consumption at 24Volts dc
C1480	1.1Amps
C1490	0.6Amps
Total Current Requirement	1.7Amps

C1421 Supply capacity	2.2Amps
Surplus Available	0.5Amps

The C1490 Omni8C may be powered from the Omni16C unit's internal supply with still 0.5Amps at 24Vdc available from terminals C-1 and C-2 for further accessories, such as the audible device.

3.9 Connecting the alarm inputs

The Omni8/16c is operated with potential free contacts connected to the input terminals. Each input is provided with a pair of terminals marked A and B. Terminal A is the alarm input and terminal B is an independently current limited wetting voltage supplied from the internal 24 volt supply as shown below. The standard Input option is 24V common 0V common is an order option.

24V Common(STD)   **0V Common (Optional)**
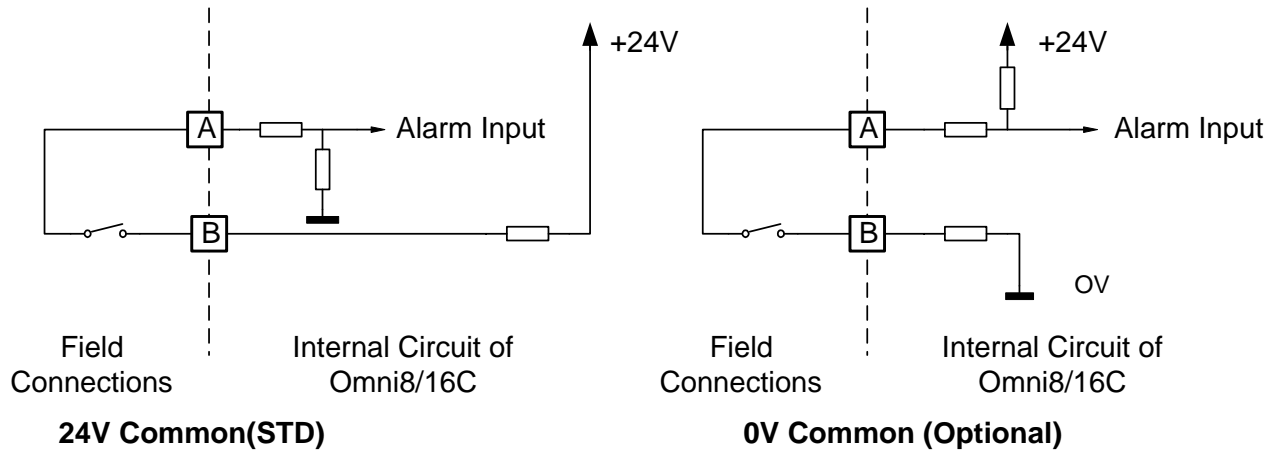
Figure 3-5 Input Connection Diagram using individually wired Potential Free Contacts

If a common return wire for all inputs in the system is required, then this must be wired directly to the +24Volt supply as shown below. For Omni16C units fitted with the optional internal power supply, this +24Volts may be found on terminal C-1.

CAUTION: When connecting the inputs in this way, the common +24Volt return MUST be fused to prevent an earth fault in the field wiring from shorting the power supply. (Power Supply 0 Volts is commonly earthed in practice to ensure that covert earth faults in the system do not go unnoticed.)

In this configuration, a field earth fault on any one input loop will remove the 24Volt wetting voltage from all the alarm inputs in the system. For this reason, the installation configuration in Figure 3-5 is always preferable.
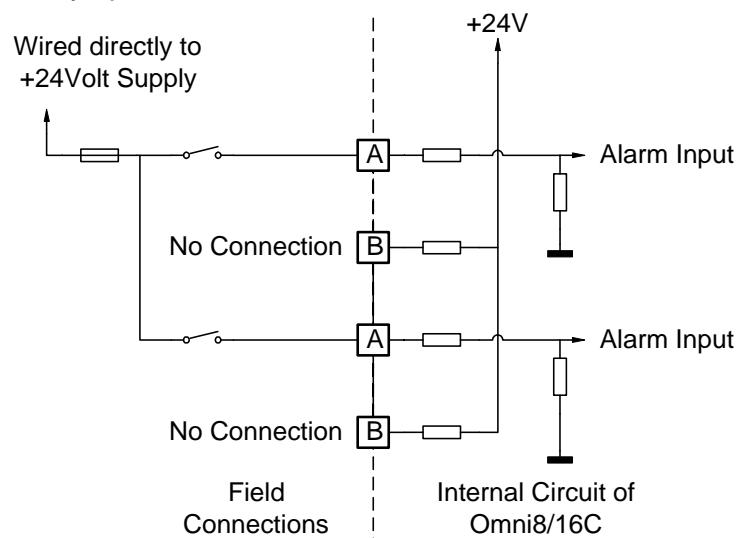
Figure 3-6 Input Connection Diagram using Common Return Wire

3.10 Connecting the Common Service Relay Contacts

Contacts from four Relays are provided as Common Outputs from the Omni8/16c.

The functions of these contacts may vary between "SWITCH-SET" mode and "SOFT-SET" mode.

NOTE All relay contacts are described below as being "normally open" or "normally closed". This refers in all cases to the "rest" state of the contact, with no power on the relay coil.

This is not be confused with the "normal" system operating condition, where the relay coil may be "normally" energised (as in "normal" for the operating condition of the system) causing a "normally open" contact to be closed when the system is functioning "normally"!

3.10.1 SWITCH-SET MODE

In "Switch-Set" mode the functions of these relays are predefined as follows:

RELAY	FUNCTION	Description
RL1	Watch-dog	A normally open contact is provided from this relay. This relay is derived from the hardware watch-dog circuitry in the Omni8/16c. If the hardware watch-dog detects a failure, then this relay will de-energise, and the contact will open. This output can be used in critical applications to monitor the health of the Omni8/16c.
RL2	Horn	A normally open contact is provided from this relay. This relay is de-energised with no alarms present and will energise when an alarm occurs causing the audible to be sounded. This contact will close to sound the audible device.
RL3	Group Alarm	A change-over contact is provided from this relay. This relay acts as a Group Alarm output for the Omni8/16c. There are various modes of operation of this Group Alarm. See Section 4.5 for further details of these modes.
RL4	Not Used	A change-over contact is provided from this relay. This relay is not used in Switch-Set mode, and will remain de-energised.

3.11 Connecting Control Pushbuttons

CAUTION: External Pushbuttons are powered from the internal circuitry of the alarm annunciator. Do NOT connect the external pushbuttons to any external power supply.

3.11.1 Controlling a single Omni8/16c with internal pushbuttons

When a single Omni8/16c is fitted with a C1420 Integral Pushbutton Station, no external wiring of pushbuttons is required and Terminals C-11 to C-15 on the rear of the unit are left unconnected.

3.11.2 Controlling a single Omni8/16c with external pushbuttons

External Test, Silence Acknowledge and Reset pushbuttons may be connected to the Omni8/16c via Terminals D-11 to D15 as shown in the following schematic:
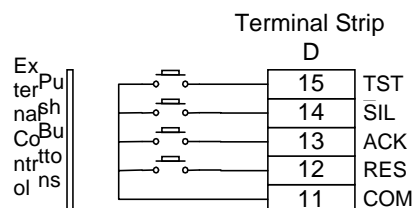
Figure 3-7 External Pushbuttons controlling a single Omni8/16c

3.11.3 Controlling multiple Omni8/16c's with external pushbuttons

Up to 16 Omni8/16C units may be controlled by a single set of external pushbuttons. Simply wire all units in parallel as shown below.
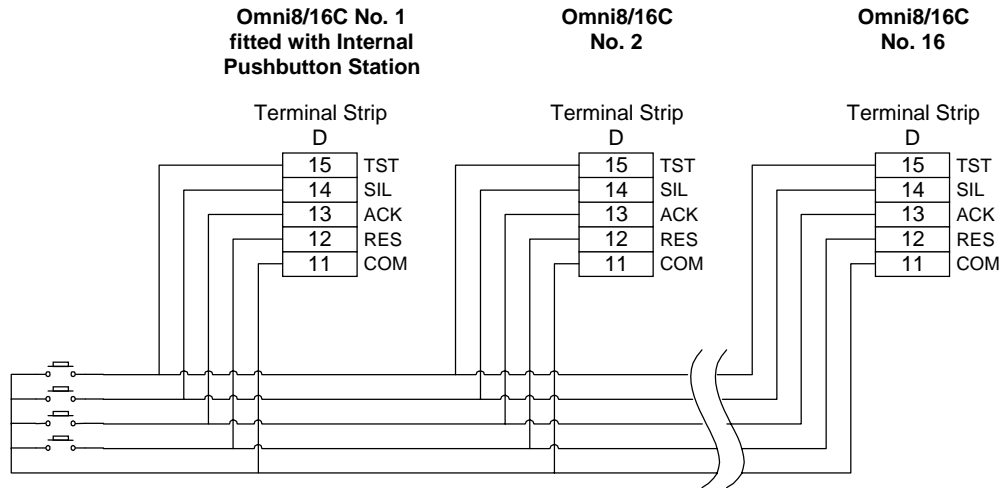
Figure 3-8 External Pushbuttons controlling multiple Omni8/16c's

3.11.4 Controlling multiple Omni8/16c's with an Integral Pushbutton Station

Up to 16 Omni8/16c units may be controlled from a Model C1420 Integral Pushbutton Station. Install the Integral Pushbutton Station as shown in section 2.6, and simply wire all units in parallel as shown below.

The internal Pushbutton Station will control all of the connected units.
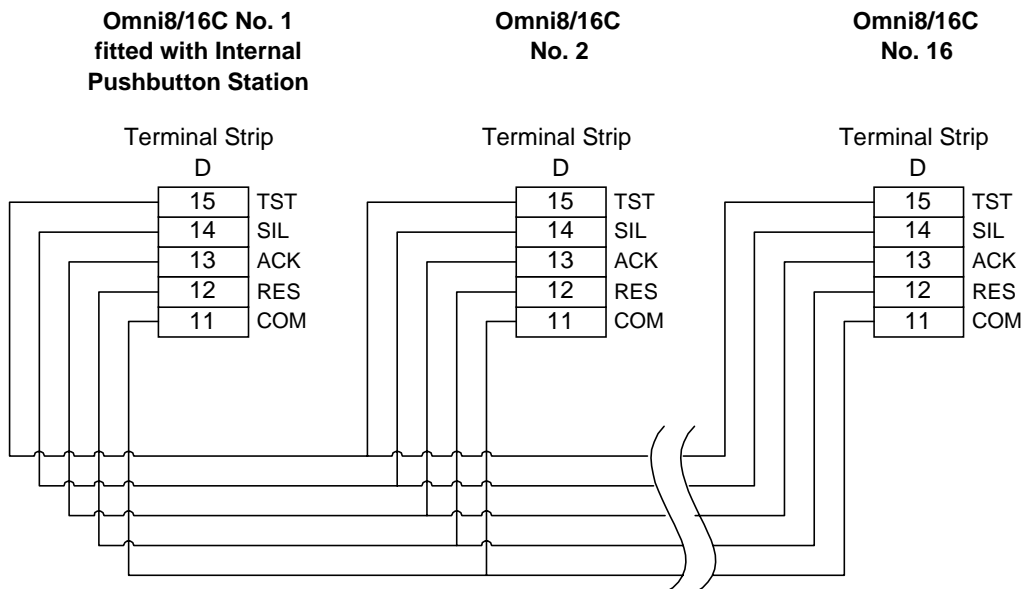
Figure 3-9 Internal Pushbutton Station controlling multiple Omni8/16c units.

3.11.5 Controlling multiple Omni8/16c's with an Omni8P Alarm Annunciator.

Up to 16 Omni8/16c units may be controlled as part of a single alarm system using an Omni8P Alarm Unit. Wire the pushbuttons of all units in parallel as shown below:

The Pushbuttons of the Omni8P will control all of the connected units.
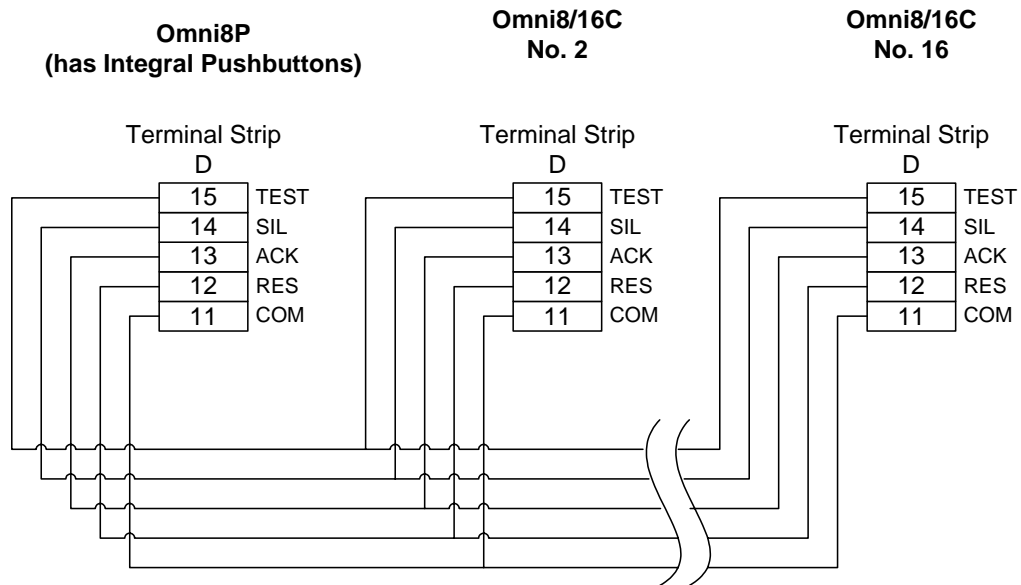
Figure 3-10 Omn8P Annunciator controlling multiple Omni8/16c units.

3.12 Connecting the C1415 Remote Pushbutton Station

Omni8/16C units may be controlled by a single Remote Pushbutton Station C1415. Simply wire as shown below.
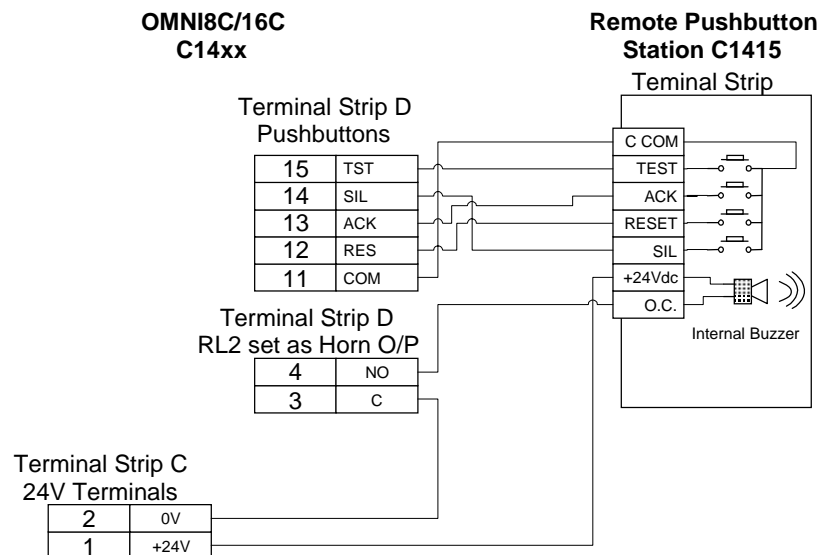
Figure 3-8 Connecting C1415 Remote Pushbutton Station to Omni8/16c units.

3.13 Connecting the Omni8P Internal Audible Device

The Omni8P is supplied with an internal audible device that can be connected to sound when an alarm occurs on the Omni8P.

Connect the Omni8P HORN relay output contact to the internal HORN as shown below:
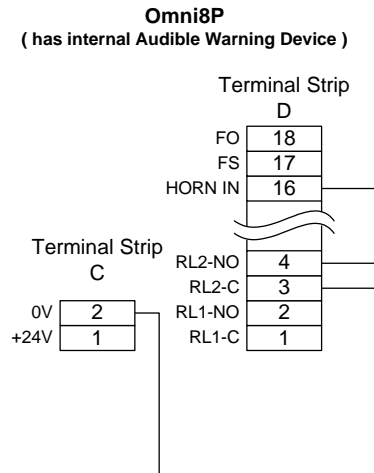
Figure 3-11   Connecting the internal Omni8P Audible Device

3.14 Connecting the Omni8P Internal Audible Device to other Omni8/16C's

The Omni8P is supplied with an internal audible device that sounds when an alarm occurs on the Omni8P.

Multiple Omni16C's can be connected to operate this audible device for any alarm in the system. Connect the Omni16C HORN relay output contacts to the Omni8P as shown below:
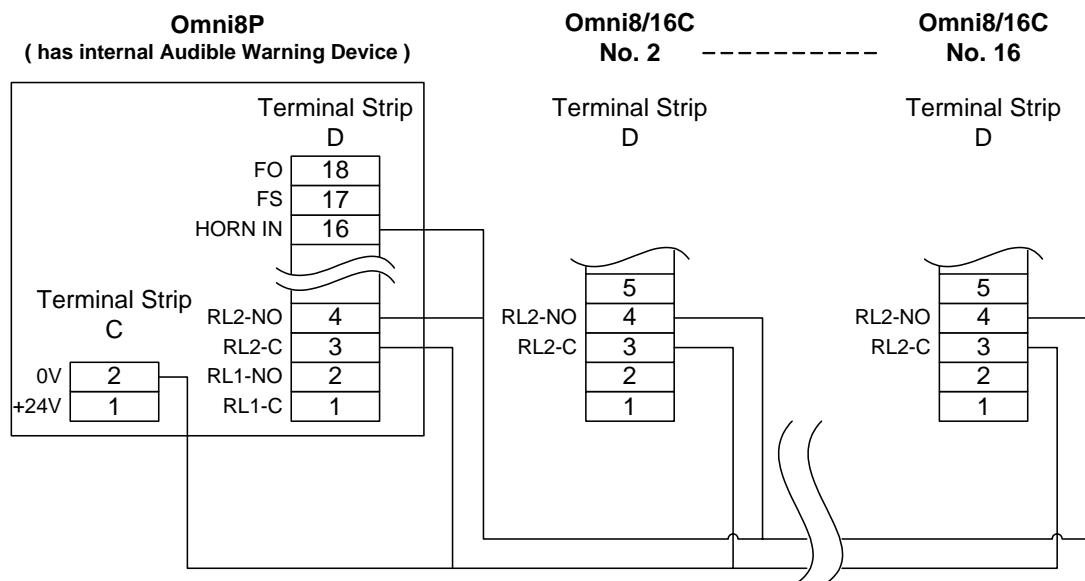
Figure 3-12   Connecting Omni8P Audible to Omni16C's

3.15 Connecting the Inhibit Input

By switching this input to 0 Volts of the 24Volt Supply (terminal C-2), all new alarms are prevented from occurring. Repeat outputs when set to follow inputs will be unaffected and input status can still be monitored via the serial link.

NOTE: The Omni8P does not have this inhibit input.

3.16 Connecting the optional Input Repeat Relay Contacts (Model C1425)

The Omni8/16c may be fitted with optional Input Repeat Relay boards. These boards provide a single normally open contact as a repeat of each alarm input in the unit. This may be used for connecting to other equipment such as sequence-of-event recorders or data-loggers.

The contact will be open when the corresponding input is the normal condition, and will be closed when the input is in the alarm condition. This is independent of whether the input is set to be normally open or normally closed. Should a single C1425 be utilised in either slots E or F, relay outputs will be mapped to Inputs 1 to 8 only.

3.17 Connecting the optional Ribbon Header Outputs (Model C1426)

The Omni8/16c may be fitted with an optional Ribbon Header Output Board. (The Model C1479 Omni16c Remote Logic Unit is fitted with this board as standard.)

This board is equipped with two 20 way ribbon cable headers.

The first header provides 16 outputs used to drive a remote display. The output will be on when the corresponding lamp is illuminated.

In panel mount Omni8/16c units with integral displays, the lamp repeat outputs on this board are in parallel with internal lamps in the unit.

The second ribbon cable header provides 16 outputs as repeats of each alarm input in the unit. This header may be used for connecting to other equipment such as OMNIFLEX's OMNILOG sequence-of-event recorders.

The output will be off when the corresponding input is the normal condition, and will be on when the input is in the alarm condition. This is independent of whether the input is set to be normally open or normally closed.

Each of these outputs is an open collector transistor output with the following electrical specification:

Collector Voltage	40Volts max.
Collector Current	100mA max.

CAUTION:

These outputs are not protected from short circuits, and exceeding the above ratings will damage the unit.
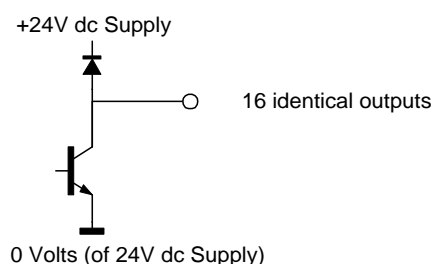
Figure 3-13 Open Collector Transistor Output Arrangement
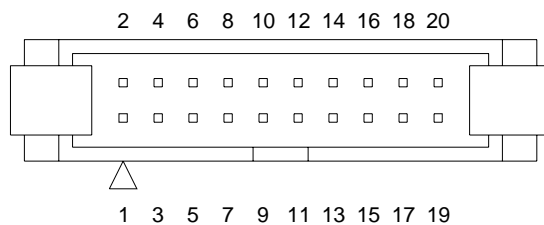
Figure 3-14 Ribbon Header Pin Layout

Pin No.	Description
1	0 Volts
2	0 Volts
3	24 Volts
4	24 Volts
5	Output 16
6	Output 15
7	Output 14
8	Output 13
9	Output 12
10	Output 11
11	Output 10
12	Output 9
13	Output 8
14	Output 7
15	Output 6
16	Output 5
17	Output 4
18	Output 3
19	Output 2
20	Output 1

Table 3-2 Ribbon Header Pin Allocation

3.18 Synchronising flashing between multiple Omni8/16c's

Up to 16 Omni8/16c's may be connected together into a single display system of up to 256 points. In order to synchronise the display flashing in the system Terminal D-17 on all units in the system must be wired together.

All units in the system must share a common power supply reference. Wire Terminal C-2 on all units together to achieve this.

3.19 Expanding First-Out Groups between multiple Omni8/16c's

Some of the alarm sequences selectable in the Omni8/16c are "First-Out" alarm sequences. This means that the flashing sequence is such that the first alarm to occur in the group will flash differently to all subsequent alarms to allow the operator to identify which alarm occurred first.

Up to 16 Omni8/16c's may be connected together into a single First-Out group. Wire Terminal D-18 on all units in the group together to accomplish this.

All units in the system must share a common power supply reference. Wire Terminal C-2 on all units together to achieve this.

4. CONFIGURING THE OMNI8/16c FOR OPERATION

4.1 Introduction

The Omni8/16c is configured by means of 8-way "set-up" switches. These are located with the connection terminals. The location of these switches can be seen in Figure 1-4 or Figure 1-6.

These "set-up" switches fall into two groups:

<u>Input Sense Selection Switches</u>

There is an 8 way "set-up" switch associated with each group of 8 alarm/display inputs and is used to configure these inputs for normally open or normally closed operation. See section 4.3 for further information.

<u>Mode Selection Switches</u>

This is a group of two 8-way switches located above Terminal Strip "C" on the unit. These switches are marked SW1 and SW2.

Each 8-way switch has 8 individual miniature switches, numbered from 1 to 8. Each of these miniature switches can be referred to individually: for example, the 8 miniature switches on SW1 are referred to as SW1-1 to SW1-8.

4.2 Modes of Operation

SW1 and SW2 are used to set the operational configuration of the Omni8/16c.

The Omni8/16c can be set into one of two modes of operation:

"**SWITCH-SET**" mode or "**SOFT-SET**" mode.

In "SWITCH-SET" mode, the entire operation of the unit is set by selections on these mode switches.

In "SOFT-SET" mode, the operation of the product is set via the programming port or (serial port if fitted) on the rear of the unit using the optional Software Configuration Software.

The product is put into "SOFT-SET" mode by a specific selection on the mode switch SW1. (SW1-1 to SW1-8 set on)

This manual covers the "SWITCH-SET" configuration. "For SOFT-SET configuration see the on-line help in the Omni16C Configuration template supplied with the Omniset Configuration Utility"

SOFT-SET mode offers the optimum in flexibility whilst SWITCH-SET Mode offers Omni16a and b style functionality and limited options. The table below summarises the capabilities of each mode and the limitations.

COMPARISON OF DIP SWITCH MODE VERSUS SOFTSET MODE CONFIGURATION OPTIONS		
CONFIGURATION OPTION	**DIP SWITCH SET MODE**	**SOFT-SET MODE**
Input Sense		
SET INPUT FOR NORMALLY OPEN OR CLOSED *Can only be set on DIP switch on each Input module*	Yes	No
Common Services		
Common Service Input Status If any bit below is 1 then the input is ON. Bit 0: INH (Inhibit input) Bit 1: TST (Lamp Test input) Bit 2: ACK (Acknowledge input) Bit 3: SIL (Silence input) Bit 4: RES (Reset input) Bit 5: FS (Flash Sync input - this bit is READ ONLY) Bit 6: FO (First Out input - this bit is READ ONLY) Bits 7-15: Reserved	No *Actuated via terminals at rear of Omni16*	Yes
Alarm Sequences		
Select Sequence number from Table 4-1. DIP switches must be set to Sequence 31 on SW1 for this register to be recognised, otherwise the DIP switch setting is used.	Sets : Input 1-8 Input 9-16	Each Input individually set
Timers		
Setup Timer Setting: Input delay timer set per input. One input per byte.	Input 1-16 *Single Timer for all Alarm Points*	*Each Alarm Point individually set Timer*
Setup Timer Resolution	Yes	Yes
Relay Outputs 1 to 4		
Setup Relay Output Function	No RL1 = Watchdog RL2 = Horn RL3 = Group Alarm RL4 = Not used	Yes Choose option for each
Setup Relay Output 1 to 4 Alarm Members. i.e. Map inputs to Relay Outputs	No Fixed all 16 Alarms mapped to Relay Outputs	Yes
Setup Group Alarm 1 to 4 Type If a relay output has been configured as a GA output, then the GA operation can be set-up for one of the following: ▪ GA follows input ▪ GA follows alarm ▪ GA acts as ring back ▪ GA set to multiple reflash ▪ GA follows ACK pushbutton (not available in switchset mode)	Yes GA1 RL 3 only	Yes
Lamp Sense		
Setup Lamp Sense All Lamps Normal Sense or Lamps Reversed Sense. **Note:** This setting only applies when SW1-8 is ON.	Yes	Yes

COMPARISON OF DIP SWITCH MODE VERSUS SOFTSET MODE CONFIGURATION OPTIONS		
CONFIGURATION OPTION	*DIP SWITCH SET MODE*	*SOFT-SET MODE*
Split First Out Group		
First Out Group Split Enter a number between 1 and 16 to decide the split between First Out Group 1 and 2. For example: A value of **4** will arrange input 1 to 4 into First Out Group 1 and inputs 5 to 16 into First Out Group 2.	No Single group of 16	Yes
System Operation		
Various System functions can be setup as follows:		
▪ Pushbutton Edge/Level Detection (default: edge)	No	Yes
▪ Auto ACK on Startup i.e. Turn off running light sequence (default is ON)	No	Yes
▪ Inhibit Input operation i.e. Close or Open to Inhibit (default is Close to Inhibit) **Note:** Only applies when SW1-8 is ON.	Yes	Yes

▪ Repeat Relay Output Options:
  ▪ Follows Input, Normally Open (default)
  ▪ Follows Input, Normally Closed
  ▪ Follows Alarm, Normally Open
  ▪ Follows Alarm, Normally Closed
  ▪ Acts as GA output
	No	Yes

4.3 Selecting the Input Sense

There is an 8 way "set-up" switch associated with each group of eight inputs. These are used to set the sense of the eight input contacts – normally open or normally closed.

These switches are located directly above each group of eight input terminals on the rear of the Omni8/16c and are clearly marked.

There is one switch for each input (numbered 1 to 8 in the group).

When the switch is OFF, the input is set to NORMALLY OPEN. (i.e. the input will enter the alarm state when the input contact is closed.)

When the switch is ON, the input is set to NORMALLY CLOSED. (i.e. the input will enter the alarm state when the input contact is opened.)

4.4 Selecting the alarm/display logic sequences

There are three fundamental variations to the switch settings chosen, dependent upon the settings of SW1-8 and SW2-7

First decide upon the setting of these two switches before proceeding to select the other switch settings.

These are shown in the following table (The input numbers shown in parentheses are for the Omni8c) :

	SW1-8	SW2-7	SW1-1 to 5	SW2-1 to 5	SW2-6 to 8
A	Off	Off	Sets sequence for inputs 1-8 (1-4)	Sets sequence for inputs 9-16 (5-8)	Operate as per Table 4-1
B	Off	On	Sets sequence for inputs 1-16 (1-8)	Sets Timer value for all input timers.	Operate as per Table 4-1
C	On	-	Sets sequence for inputs 1-16 (1-8)	Sets Serial Port address and R/W	Sets Baud Rate etc.

NOTES:

1. Settings A and B are compatible with the previous Omni16a and Omni16b products.
2. When SW1-8 and SW2-7 are set as per A or B in the table above, the serial port address defaults to 2, and the communications settings default to ASCII 9600 baud.
3. When SW1-8 is ON as per C in the table above, then the following default settings apply:

    Inhibit Contact Sense is set to normally open, close to inhibit.

    Lamp sense is set to normal.

Table 4-1: The Sequence Switch Settings

Table 4-1: The Sequence Switch Settings

SEQ. NO.	SW1 1	2	3	4	5	6	7	8	SW2 1	2	3	4	5	6	7	8	DESCRIPTION	ISA DESIGNATION	TIME DELAY ON...
0	0	0	0	0	0				0	0	0	0	0				FACTORY TEST MODE		
1	1	0	0	0	0				1	0	0	0	0				LAMP FOLLOWS INPUT	--	--
2	0	1	0	0	0				0	1	0	0	0				MOMENTARY (FLEETING) ALARM, MANUAL RESET	M-1	INPUTS
3	1	1	0	0	0				1	1	0	0	0				ALARM ONLY (NO LOCK-IN) AUTO RESET	A-1-4	INPUTS
4	0	0	1	0	0				0	0	1	0	0				MOMENTARY ALARM, MANUAL RESET WITH RINGBACK	R-1-10	INPUTS
5	1	0	1	0	0				1	0	1	0	0				MULTIPLE GROUP, FIRST OUT MANUAL RESET	F2M-1	--
6	0	1	1	0	0				0	1	1	0	0				FIRST OUT, AUTO RESET, F.O. RESET INTERLOCK	F3A-1-3	--
7	1	1	1	0	0				1	1	1	0	0				SINGLE GROUP, 1st OUT, MANUAL RESET, 1st UP CONTINUOUS FLASH	--	--
8	0	0	0	1	0				0	0	0	1	0				1st OUT, MANUAL RESET WITH NO SUBSEQUENT ALARM STATE SILENCE PUSHBUTTON	F1M-1	INPUTS
9	1	0	0	1	0				1	0	0	1	0				MOMENTARY (FLEETING) ALARM MANUAL RESET	--	HORN
10	0	1	0	1	0				0	1	0	1	0				MOMENTARRY (FLEETING) ALARM MANUAL RESET	--	REFLASH
11	1	1	0	1	0				1	1	0	1	0				MOMENTARY (FLEETING) ALARM MANUAL RESET FOR MOTOR ALARMS	--	INPUTS
12	0	0	1	1	0				0	0	1	1	0				MOMENTARY (FLEETING) ALARM	--	RETURN TO NORMAL
13	1	0	1	1	0				1	0	1	1	0				PULSE MONITORING ALARM WITH MANUAL RESET	--	--
14	0	1	1	1	0				0	1	1	1	0				MOMENTARY (FLEETING ALARM), MANUAL RESET, WITH RINGBACK.		
18	0	1	0	0	1				0	1	0	0	1				MOMENTARY (FLEETING) ALARM AUTO RESET	--	INPUTS
21	1	0	1	0	1				1	0	1	0	1				MULTIPLE GROUP, FIRST OUT, AUTO RESET	F2A-1	--
23	1	1	1	0	1				1	1	1	0	1				SINGLE GROUP, 1st OUT, AUTO RESET, 1st UP CONTINUOUS FLASH	--	--
24	0	0	0	1	1				0	0	0	1	1				MULTIPLE GROUP, FIRST OUT, AUTO RESET, NO SUBSEQUENT ALARM STATE, SILENCE PUSHBUTTON	F1A-1	--
25	1	0	0	1	1				1	0	0	1	1				MOMENTARY (FLEETING) ALARM AUTO RESET	--	HORN
26	0	1	0	1	1				0	1	0	1	1				MOMENTARY FLEETING ALARM, AUTO RESET	--	NO ACTION REALARM
27	1	1	0	1	1				1	1	0	1	1				MOMENTARY ALARM AUTO RESET FOR MOTOR ALARMS	--	INPUT
28	1	0	1	1	1				1	0	1	1	1				PULSE MONITORING ALARM AUTO RESET	--	--
31	1	1	1	1	1	1	1	1	0	1	0	0	1	0	0	1	SOFT-SET MODE. ALL SETTINGS ARE SET VIA SOFTWARE. *(Refer Table 4-2)*	--	--

	SW1 6	7	SW1 8	SW2 1	2	3	4	5	6	7	8	DESCRIPTION	NOTE
FOLLOWS INPUT	0	0										FUNCTION OF GROUP ALARM ON RELAY 3 (G.A.)	
FOLLOWS ALARM STATE	1	0											NOTE:
ACTS AS RINGBACK HORN	0	1											In the above sequences, the switch sense is as follows:
ACTS AS MRF (REFLASH)	1	1											"1" = switch in on position
SW2=TIMERS/SEQUENCE 9-16			0									When SW1-8 is OFF, SW2 sets functions as shown in this table.	"0" = switch in off position
SW2=SERIAL PORT SETTINGS			1	#	#	#	#	#	#	#	#	When SW1-8 is ON , SW2 sets Serial Port Address and Baud Rate etc. See Section 4.9	
CLOSE TO INHIBIT									0			With SW1-8 OFF, when SW2-6 is OFF, close contact on Inhibit Input to stop further alarms	
OPEN TO INHIBIT									1			With SW1-8 ON, when SW2-6 is ON, open contact on Inhibit Input to stop further alarms	
TIMERS OFF										0		With SW1-8 OFF and SW2-7 OFF: Timers are off, and SW2-1 to SW2-5 set the sequence of inputs 9-16	
TIMERS ON				*	*	*	*	*		1		With SW1-8 OFF and SW2-7 ON: SW2-1 to SW2-5 sets Time-out value. See Figure 4-1	
LAMP SENSE NORMAL											0	With SW1-8 OFF, when SW2-8 is OFF: Lamp outputs operate normally	
LAMP SENSE REVERSE											1	With SW1-8 OFF when SW2-8 is on: Lamp outputs operate in reverse sense. i.e. On instead of off and v.v.	

4.5 Selecting the Group Alarm Relay (RL3) Output Function

The Group Alarm (G.A.) relay RL3 offers a changeover contact on Terminal Strip D.
SW1-6 and SW1-7 are used to set the mode of operation of this relay.
There are four modes to choose from:

1. ***Relay follows input***
   The relay is normally energised.

   Any abnormal input will de-energise the relay. The relay will re-energise when all inputs return to their normal states, regardless of the state of the alarm lamps.
   This is useful for tracking the actual state of the inputs. Any abnormal input will cause the relay to be de-energised.

2. ***Relay follows alarm state***
   The relay is normally energised.

   Any alarm state will de-energise the relay. The relay will return to normal when all alarm states have returned to normal. (i.e. the alarms have been acknowledged by the operator and the entire display is off)
   This is useful for tracking the actions of a local operator in clearing the problem. If a 'fleeting' alarm sequence is chosen, the relay will remain de-energised until the operator clears the display, even though the input contact may have already returned to the normal state.

3. ***Relay acts as ring-back horn***
   The relay is normally de-energised.
   The G.A. relay will energise when any abnormal input returns to normal. The RESET pushbutton must be depressed to return the G.A. to its normal state.
   (This G.A. type can be used to alert an operator to the fact that an alarm has returned to its normal state).

4. ***Relay acts in Multiple Reflash Mode***
   The relay is energised with all inputs in their normal state.
   The relay is de-energised by the first input changing to the abnormal state.
   Upon each subsequent input changing to the abnormal state, the relay will momentarily energise (for about 1 second), then return to the de-energised state.
   This is useful when the relay contact is used for example to trigger a dial up alarm, and if subsequent inputs going into alarm must also trigger the dial-up alarm.

   Referring to Table 4-1: The Sequence Switch Settings, select one of the 4 relay modes by setting switches SW1-6 and SW1-7 to the appropriate positions.

4.6 Selecting the Inhibit Input Contact Sense

Select the required inhibit input sense by setting switch SW2-6 to the appropriate position (refer to Table 4-1).

Note: SW1-8 must be off for this selection to be operational. When SW1-8 is on, SW2-8 is reassigned, and the inhibit input defaults to normally open, close to inhibit.

4.7 Selecting the Lamp Status

The lamp status of the display windows may be selected on SW2-8 to give the following:

NORMAL: lamps OFF when inputs are normal, ON when inputs are abnormal.

REVERSE: lamps ON when inputs are normal, OFF when inputs are abnormal.

Note: SW1-8 must be off for this selection to be operational. When SW1-8 is on, SW2-6 is reassigned, and the lamp status defaults to Normal.

4.8 Selecting Time Delays

The Omni8/16c has a timer associated with each alarm point.

These timers are used with special Timer sequences. A large "T" in the sequence diagram in Section 7 identifies these sequences.

There are two methods of selecting a time delay setting for these sequences:

1. The timers may be set using SW2-1 to SW2-5. This method is invoked by switching SW2-7 on. This method is recommended when all timers have the same time setting.

2. Programming the memory of the Omni8/16c using the optional Software Configuration Utility will set each input timer individually. If this memory is not programmed, then the timers default to the switch settings. This method should be used when different input timer settings are required.

SW 2

```
1 2 3 4 5 6 7 8
ON
```

On = +1
On = +2
On = +4
On = +8
On = +16
Inhibit
Timer On/Off
On=Slow; Off = Fast
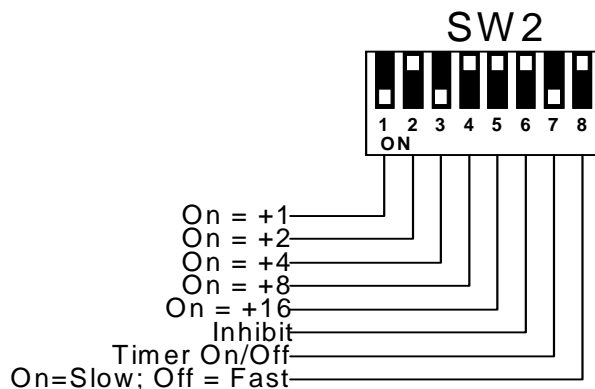
Example:

SW1-8 must be off to enable SW2 as time setting.

SW2 in this diagram shown set for 0.5 seconds.

Slow = Uses the Slow timer i.e. 1 sec increments

Fast = Uses the Fast timer i.e. 1/10 sec increments

Figure 4-1 Setting Time Delays on SW2

4.8.1 Omni8/16C Fast and Slow Timers

Figure 4-1 above shows the use of the Fast and Slow timer. These timers allow the user the most flexible timing options. For very short timing durations, the Fast timer should be used. This timer counts time in units of 100ms or 1/10 of seconds.

For longer time periods, the Slow timer should be used. This timer is derived from the Fast timer and therefore counts time in multiples of the Fast timer. The default setting of the Slow timer is to count time in seconds. It is possible to alter the timing mechanism of the Slow timer to count in larger units of time via the programming port.

4.8.2 Explanation of Timer Operation in a Timer Sequence

With reference to any one of the special timer sequences:

When the alarm point moves from a state where the timer is stopped to a state where the timer is running, the timer will be started.

When the alarm point moves from a state where the timer is running to a state where the timer is also running, the timer is allowed to continue timing.

When an alarm point moves from a state where the timer is running to a state where the timer is stopped, the timer is put into the timed-out (stopped) state.

4.9   Selecting Serial Port Settings

The Omni8/16c can be equipped with an optional RS232/485 serial port. This port supports the Modbus protocol. In Switch-Set or Soft-Set mode, inputs and outputs can be read via the serial port using standard Modbus© commands. Please refer to Section 8 for the layout of Modbus Registers that are available in the Omni8/16C.

4.9.1 Default Settings

When the unit is in Switch set mode (refer to settings A or B of section 4.4), the unit may be accessed via Modbus without changing the dipswitch settings at all. In this mode, communications settings are fixed as follows:

Default Modbus Settings with SW1-8 OFF	
Modbus Slave Address	2
Comms settings	ASCII; 9600 baud; No Parity, 7 Data bits, 2 Stop Bits

Table 4-2– Default Serial Port Settings with SW1-8 OFF

4.9.2 Modbus Address and Mode Settings

In applications where the Modbus Slave address and/or comms settings are to be different from the default settings as shown in the table above then set SW1-8 ON to enable SW2 for additional serial port settings.
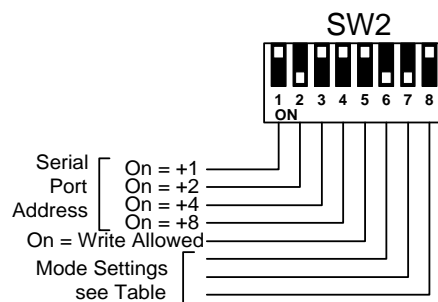
Figure 4-2 Serial Port Settings on SW2

Example:

SW1-8 must be ON to enable SW2 for serial port settings.

SW2 in this diagram is shown set for Address 2; Read only; and RTU mode, 1200 baud, No Parity,

SW2-1 to 4 – Modbus Address Settings	
(0 = Off ; 1 = On)	<u>1:2:3:4</u>
Modbus Slave Address 1	1:0:0:0
Modbus Slave Address 2	0:1:0:0
Modbus Slave Address 3	1:1:0:0
Modbus Slave Address 4	0:0:1:0
Modbus Slave Address 5	1:0:1:0
Modbus Slave Address 6	0:1:1:0
Modbus Slave Address 7	1:1:1:0
Modbus Slave Address 8	0:0:0:1
Modbus Slave Address 9	1:0:0:1
Modbus Slave Address 10	0:1:0:1
Modbus Slave Address 11	1:1:0:1
Modbus Slave Address 12	0:0:1:1
Modbus Slave Address 13	1:0:1:1
Modbus Slave Address 14	0:1:1:1
Modbus Slave Address 15 – 31 With this selection, the Modbus address can be set in Soft-Set mode to any address from 15 (default) to 31.	1:1:1:1

Table 4-3 Serial Port Address Setting on SW2-1 to 4

NOTE: The Omni16C will respond to a broadcast write sent to Address 0 if Modbus writes are enabled regardless of the address setting of the unit. Any data write command from the Modbus Master sent to Address 0 will be recognised by all Omni16C's. No response will be sent.

Modbus Write Enable Setting	
SW2-5 Off	Modbus Port is Read Only. No settings or alarms can be changed when this switch is off.
SW2-5 On	Switch this switch ON to enable the Modbus Master to write to any registers in the Omni8/16C.

Table 4-4– Modbus Write Enable Setting

SW2-6 to 8 Mode Settings	
(0 = Off ; 1 = On)	<u>6:7:8</u>
ASCII; 9600 baud; No Parity; 7Data 2Stop	0:0:1
ASCII; 4800 baud; No Parity; 7Data 2Stop	1:0:1
ASCII; 2400 baud; No Parity; 7Data 2Stop	0:1:1
ASCII; 1200 baud; No Parity; 7Data 2Stop	1:1:1
RTU; 9600 baud; No Parity; 8Data 1Stop	0:0:0
RTU; 4800 baud; No Parity; 8Data 1Stop	1:0:0
RTU; 2400 baud; No Parity; 8Data 1Stop	0:1:0
RTU; 1200 baud; No Parity; 8Data 1Stop	1:1:0

Table 4-5 Serial Port Mode Parameters on SW2-6 to 8

4.10 Changing the operation of the Repeat Outputs

It is possible to change the operation of the Repeat Output relays should the application require it. In most applications it the Repeat Outputs will repeat the inputs status of the inputs i.e. is the input is normal then the corresponding repeat relay is de-energised and if the input is abnormal then the repeat relay output is energised. This is the default operation.

Using the Omni8/16c Configuration Utility, the repeat relays may be setup to repeat the Alarm status of the inputs i.e. the repeat is energised when the Alarm sequence is in the alarm condition. This is identified as the state in which the corresponding lamp is illuminated. This is particularly useful in timer sequences where the lamp illuminates after the input timer delay has elapsed. When the repeats are setup for alarms, the repeats will energise when the lamp illuminates, not when the input goes abnormal.

Repeat outputs can additionally be setup for fail-safe operation. In this mode the output relay is energised in the normal condition and de-engerised in the alarm condition.

Please refer to the On-line help available in the Configuration Utility for more information.

5. OPERATION

5.1 Power-up

When power is applied to the Omni8/16c, the unit commences an automatic, built-in circuit test routine. This results in the unit sounding the audible for approximately half a second followed by the cyclic illumination of each lamp in turn starting at lamp 1 to the last lamp and back to 1 again etc. in a "marching sequence".
If no internal faults are detected in the unit, then this test mode display continues until the Acknowledge Pushbutton is pressed or until an input changes to the alarm state.
If an internal fault is detected, then the unit will display a fault indication by continuously flashing one of the lamps. If this occurs, then the unit must be sent for service.
If a new alarm occurs while the Omni8/16c is in this test routine, the unit will immediately revert to its normal mode of operation and will deal with the alarm state according to the pre-selected alarm sequence.

5.2 Normal Operation

During the normal operation, the Omni8/16c will deal with any alarm states according to its pre-set alarm sequences. (The instructions for setting-up these sequences are given in section 4.4). Section 7 provides detailed block diagrams for the function of each alarm sequence.
When an alarm condition occurs and the horn sounds, the operator should depress the relevant pushbuttons, where necessary, according to the pre-selected alarm sequence.
When the Omni8/16c is put into its test routine by depressing the TEST pushbutton, any existing alarm states are "remembered" and the alarm annunciator will revert to its previous state when it returns to its normal mode of operation.
If a new alarm state occurs while the Omni8/16c is performing its test routine, the unit will immediately revert to its normal mode of operation and deal with the alarm state according to the pre-selected alarm sequence.

5.3 Test Functions

5.3.1 Overview of the Test Functions

The Test button operates as a combines lamp test and circuit test function.

No information is lost during the entire test routine, and each alarm display returns to the exact state it was in before the test.

5.3.2 Pressing the Test Button

When the Test button is pressed, the unit checks the results of its regular full circuit test, and if all checks performed pass, then a conventional lamp test is performed, by illuminating all of the lamps while the Lamp Test Pushbutton is held down. When the Test pushbutton is released, the Omni8/16c reverts to the state it was in before the Test button was pushed.

If the circuit Test fails then the unit enters its "marching sequence" test routine described in Section 5.3.5 and the test failure code will be displayed by flashing one of the lamps continuously.
In this way, the display/annunciator Test button acts both as a Lamp Test and Circuit Function.

5.3.3 Fault Indication on Circuit Test

If a fault is found in one of the tests performed, then the unit enters its full "marching lamp sequence", with, in addition, one or more of the lamps flashing continuously to indicate the fault located. This is described in detail in Section 5.3.5

5.3.4 Manually invoking the Circuit Test Function.

As a confidence measure, the unit may be placed in the full "marching sequence" Circuit Test Mode at any time by holding down the Silence button and then pressing the Test Button. See section 5.3.5

5.3.5 The "Marching Sequence" Circuit Test Display

This routine is entered upon the following conditions:

• Upon power up.

• If the Test button is pressed and a fault is detected in the unit.

• By holding down the Silence button and then pressing the Test button manually enters this function.

• Any time during normal operation, if the unit during its regular self-test routines detects a fault.

This test routine begins by activating the horn output circuit for approximately one second.

The operator should therefore check that the horn sounds for this short period.

Immediately after this half-second period, if the Omni8/16c is functioning correctly, the following visual indication will occur:

The display will begin a "marching light" sequence, with each display window illuminating and then extinguishing, one at a time, starting with the display point 1 (top left-hand window) and ending with the display point 8 or 16(bottom right-hand window). All display windows will then remain extinguished for a brief moment.

The "marching" sequence will then begin again, and this procedure of "marching" sequence followed by the brief "blank" display period will be repeated continuously until the ACKNOWLEDGE pushbutton is depressed, or until an input changes state.

This marching sequence indicates that the alarm annunciator has passed all its own internal tests and is functioning correctly. If the lamp display exhibits any other pattern then a fault has been detected, and the unit should be returned for service.

To exit the test mode and begin normal operation, the ACKNOWLEDGE pushbutton should be pressed.

The pushbuttons may also be tested in this mode:

If the SILENCE button is depressed - lamp No. 1 flashes continuously.

If the ACK button is depressed - the annunciator reverts to normal operation.

If the RESET button is depressed - lamp No. 3 flashes continuously.

If the TEST button is depressed - lamp No. 4 flashes continuously.

If any other lamp flashes continuously, then the unit has detected a fault and must be returned to the factory for service.

If a new alarm occurs while the Omni8/16c is in this test routine, the unit will immediately revert to its normal mode of operation and will deal with the alarm state according to the pre-selected alarm sequence.

It is possible under some circumstances to continue to operate the Omni8/16c even after a fault has been detected. The table below will assist in diagnosing the fault found.

Table 5-1 Fault diagnosis during Circuit Test

Display Window No.	FAULT SYMPTOM		POSSIBLE CAUSE
1	FLASHING	during "Marching Sequence"	SIL pushbutton held down, or stuck in ON state
	STEADY ON	during "Marching Sequence", and stays ON during "Blank" display period.	Window No. 1 has lamp output circuit fault.
	STEADY OFF	during "Marching Sequence", and stays OFF during "Blank" display period.	Window No. 1 has lamp failure or output circuit fault.
2	FLASHING	during "Marching Sequence"	ACK pushbutton held down, or stuck in ON state (this condition must have been present BEFORE the CCT. TEST mode was initiated)
	STEADY ON	during "Marching Sequence", and stays ON during "Blank" display period.	Window No. 2 has lamp output circuit fault.
	STEADY OFF	during "Marching Sequence", and stays OFF during "Blank" display period.	Window No. 2 has lamp failure or output circuit fault.
3	FLASHING	during "Marching Sequence"	RESET pushbutton held down, or stuck in ON state.
	STEADY ON	during "Marching Sequence", and stays ON during "Blank" display period	Window No. 3 has lamp output circuit fault.
	STEADY OFF	during "Marching Sequence", and stays OFF during "Blank" display period	Window No. 3 has lamp failure or lamp output circuit fault.
4	FLASHING	during "Marching Sequence"	TEST pushbutton held down, or stuck in ON state.
	STEADY ON	during "Marching Sequence", and stays ON during "Blank" display period.	Window No. 4 has lamp output circuit fault.
	STEADY OFF	during "Marching Sequence", and stays OFF during "Blank" display period.	Window No. 4 has lamp failure or lamp output circuit fault.
ANY OTHER LAMP	STEADY ON	during "Marching Sequence", and stays ON during "Blank" display period	Window has lamp output circuit fault.
	STEADY OFF	During "Marching Sequence", and stays OFF during "Blank" display period.	Window has lamp failure or lamp output circuit fault.
1,2,3,4,6	STEADY ON	During "Blank" display period but OFF during "Marching Sequence"	Fault detected on one of the INPUT logic circuits
1,2,3,4	STEADY ON	During "Marching Sequence"	Fault detected on the SPI bus OR all four pushbuttons stuck ON
1,2,3,4,5,6	STEADY ON	During "Blank" display period but OFF during "Marching Sequence"	Fault detected on the SPI bus
1,2,3,4,5,7	STEADY ON	During "Blank" display period but OFF during "Marching Sequence"	DIP switches are set all OFF. (Note: This is a special factory test mode. If the acknowledge button is pressed in this mode, then the marching light sequence will stop, and other factory tests will be implemented. Changing any DIP switch will exit this mode.)
1,2,3,4,7	STEADY ON	During "Blank" display period but OFF during "Marching Sequence"	Fault detected with the on-board EEPROM

5.4 Use of the inhibit input

If the Inhibit Input (on TS-D terminal 16) is in the abnormal condition then all of the alarm inputs will be disabled from causing a new alarm. All other functions of the unit will remain unaffected. When this input reverts to the normal state, then operation of the Omni8/16c reverts to full operation, and the unit will respond to any input changes that may occur thereafter.
The normal state is conventionally with the Inhibit input normally open and may thus be left unconnected.
If SW1-8 is off, the normal state of the Inhibit input may be changed to normally closed by switching SW2-6 on.

6. SPECIFICATIONS

Power Supply Options

Voltage Option	24Vdc	20-60Vdc	85-264Vac/dc
Isolation PSU to inputs	None	1500Vrms	1500Vrms
Max dc Ripple	10% pk. to pk.	10% pk. to pk.	N/A
Current Consumption	See Section 3.7 of this manual		

Alarm/Display Inputs - Non Isolated

Type	Potential Free Contacts or switch to 0volts Common +ve	Switch to +24volts Common -ve
Contact Sense	User Selectable Normally Open or Closed on rear of unit	
Max. open circuit voltage		28Vdc
Max. closed circuit current		5mA per input circuit
Max. Loop Resistance to detect closed contact		200 ohms
Min. Loop Resistance to detect open contact		100 kohms
Input Scan Rate	4 milliseconds with 8millisecond filter. Inputs must be stable for at least 8 milliseconds for a change of state to be detected.	
Wire size	1.5mm^2 (17SWG/15.5SWG) max.	
Connections	Via plug-in Terminals	

Alarm/Display Inputs - Isolated

Type	19-60Vdc	90 to 150V ac or dc
Isolation Input to Logic	1500Vac rms	1500Vac rms
Input to Input Isolation	500Vac rms	500Vac rms
Qty and Type	16 Inputs dc	16 Inputs dc or ac
Contact Sense	User Selectable Normally Open or Closed on rear of unit	
Compliance to Standards		
Safety	IEC 950	
EMC	EN50081-2: EN50082-2	
Wire size	1.5mm^2 (17SWG/15.5SWG) max.	
Connections	Via plug-in Terminals	

Alarm Sequences

Quantity	: 27 (user selectable by set-up switches)
ISA types	M-1, A-1, A-1-4, R-1-10, F2M-1, F2A-1, F3A-1-3, F1M-1, F1A-1
Other types	See sequence diagrams for full selection.

Flash Rates

Fast Flash Rate	140 flashes per minute

Slow Flash Rate	35 flashes per minute		

Integral Pushbuttons

Quantity	Four buttons mounted externally or optionally on front panel in last window position.		
Type	Normally Open, Close to operate		
Functions	Silence; Acknowledge; Reset; combined Lamp & Circuit Test		

Window Display

Types	Back-lit LED	Side bar LED	Incandescent Lamp
Window Size	24mmx64mm	21mmx51mm	24mmx64mm
Legend Area	21mmx60mm	20mmx40mm	21mmx60mm
Legend Type	User printed on film with laser/inkjet using software provided.	Engraved plastic coloured window	User printed on film with laser/inkjet using software provided.

Common Service Relay Contact Outputs

Contact Type	2 Potential free changeover (Form C) 2 Potential free normally Open (Form A)
Contact Rating	2A 30Vdc or 0.5A 230Vac
Isolation	1000Vac from contact to other circuits

(Optional) Repeat Relay Contact Outputs

Contact Type	Potential free normally open (Form A) Relay is de-energised when input contact is normal.
Contact Rating	2A 30Vdc or 0.5A 230Vac
Isolation	250Vac contact/contact and 1000Vac contact/coil

Temperature Range

Operating Temperature	0°C – 60 °C (+32°F – 140°F) for LED versions 0°C – 50 °C (+32°F – 122°F) for incand. Lamp versions
Storage Temperature	-10°C – 70 °C (+14°F – 158°F)

Weight

Unpacked	1.8kg approx.
Packed	2.2kg approx.

Compliance to Standards

CE	Meets requirements for CE marking.
Safety	EN 60950:1995
Emissions	EN 55011 and EN50081-2:1994 Group I, Class A
Immunity – ESD	IEC 61000-4-2:1995, level 3
Immunity – RF Fields	IEC 61000-4-3:1995, level 3
Immunity – Fast Transients	IEC 61000-4-4:1995 2 kV – DC power port 1 kV – input/output lines
Supply Variations	IEC 61000-4-7:1991, 24 V dc +15% -10%

Accessory Ordering Information	
ORDER CODE	DESCRIPTION
C1421	85-264Vac/dc Isolated Power Supply
C1422	20-60Vdc Isolated Power Supply
C1423	Isolated RS232/485 Serial Port
C1425	8 way Repeat Relay Board
C1426	Ribbon-Header Repeat Output Board
C1420	Integral Pushbutton Station
C1415	Remote Pushbutton Station with Audible
C1150	Red Back-lit LED Lamp Board
C1151	Yellow Back-lit LED Lamp Board
C1152	Green Back-lit LED Lamp Board
C1153	Blue Back-lit LE Lamp Board
C1161	Incandescent Lamp replacement 10 pack
C1162	Incandescent Lamp replacement 100 pack
C1463	Assorted Back-lit Colour Filter Kit

7. ALARM SEQUENCE DIAGRAMS
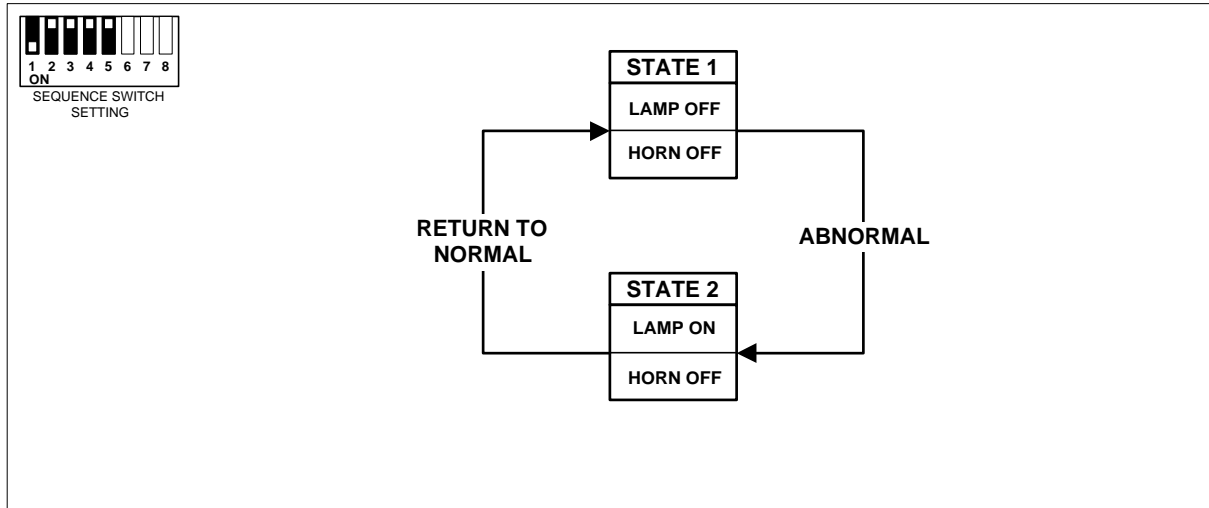
Sequence 1 - Lamp Follows Input
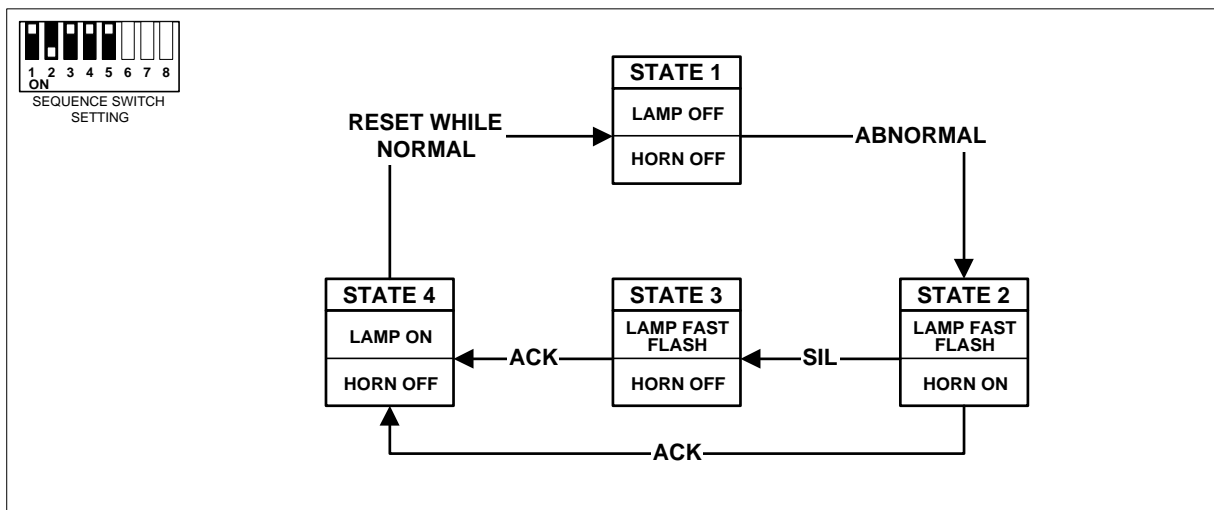
Sequence 2 - Momentary (Fleeting) Alarm, Manual Reset, Timer option off
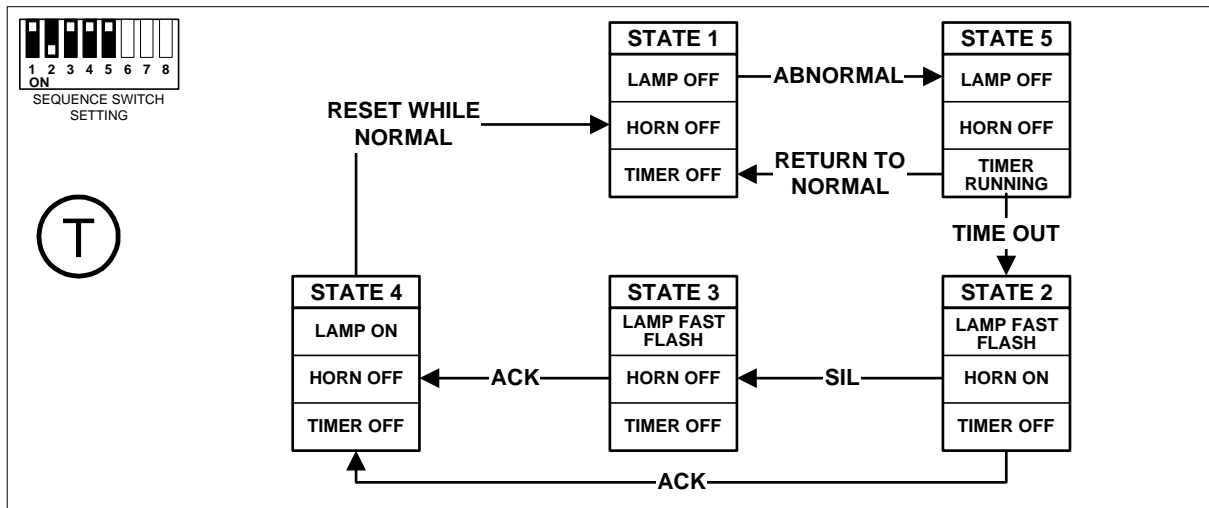
Sequence 2 - Momentary (Fleeting) Alarm Manual Reset with Time Delay on Inputs
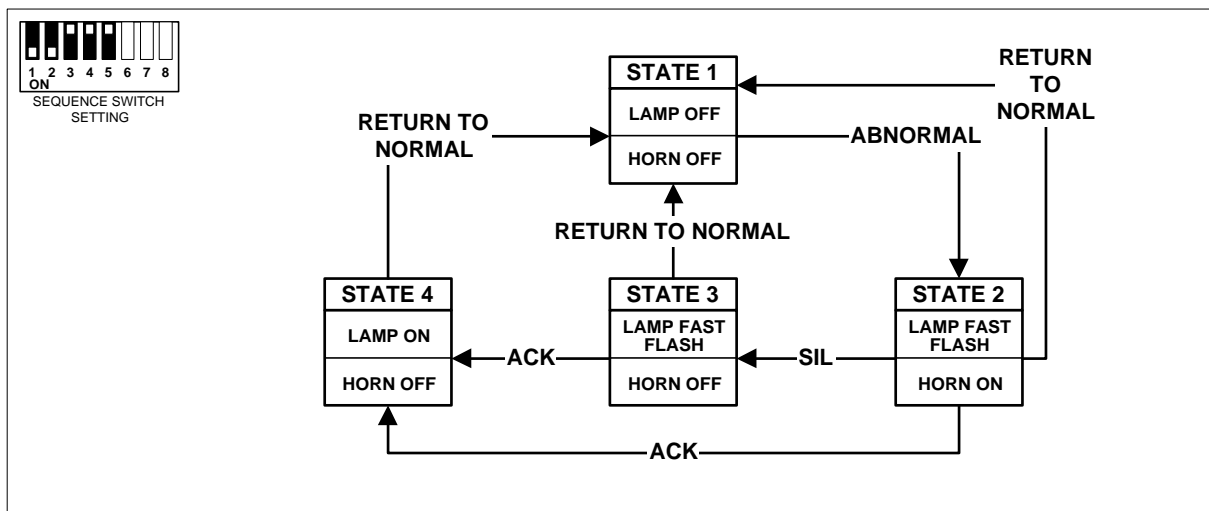
Sequence 3 - Alarm Only (No Lock-in), Auto Reset, (Timer option off)
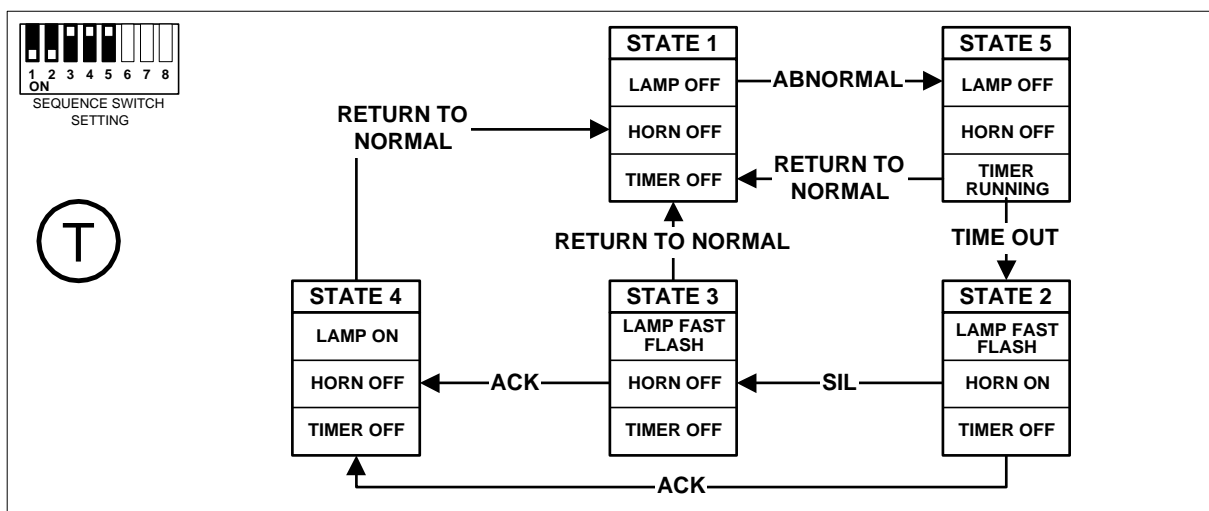
Sequence 3 - Alarm Only (No Lock-in) Auto Reset with Time Delay on Inputs
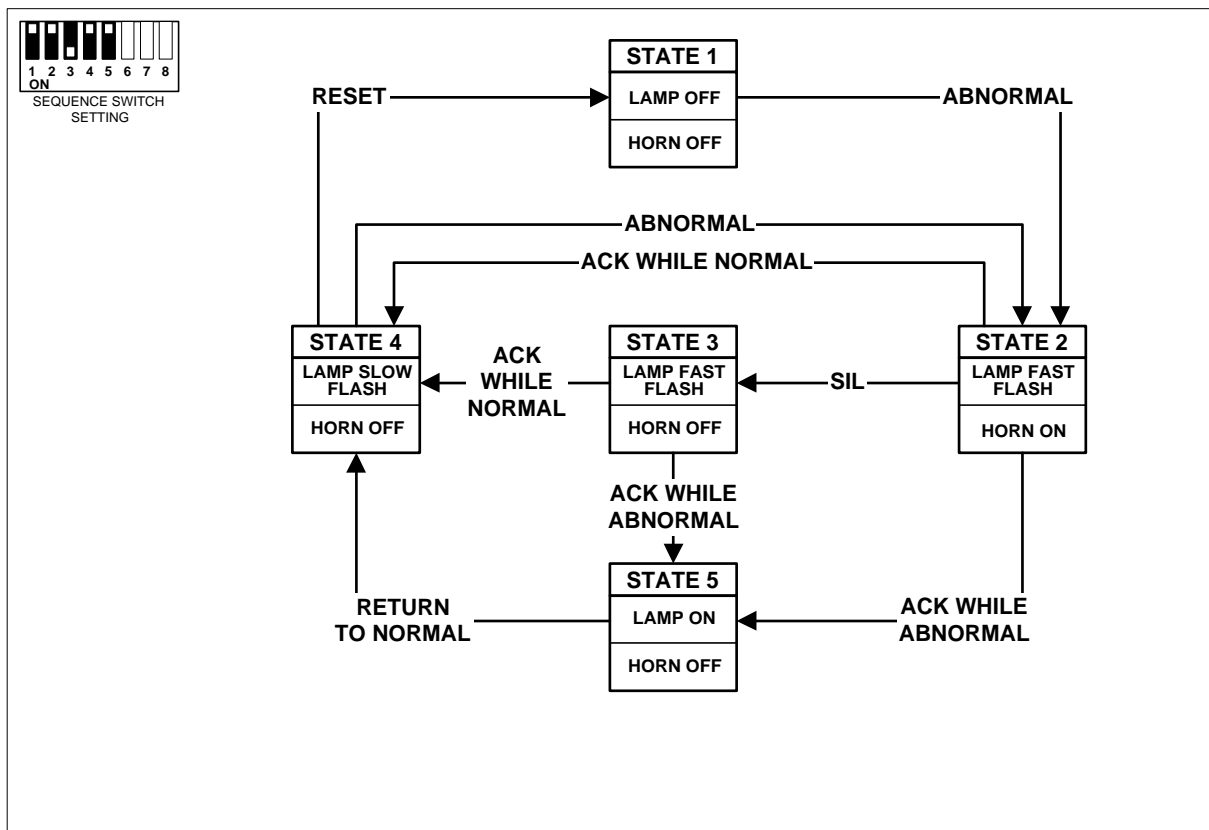
Sequence 4 - Momentary Alarm, Manual Reset, with Ringback, (Timer Option Off)

Sequence 4 - Momentary (Fleeting) Alarm, Manual Reset, with Ringback, Timer Delay on inputs.
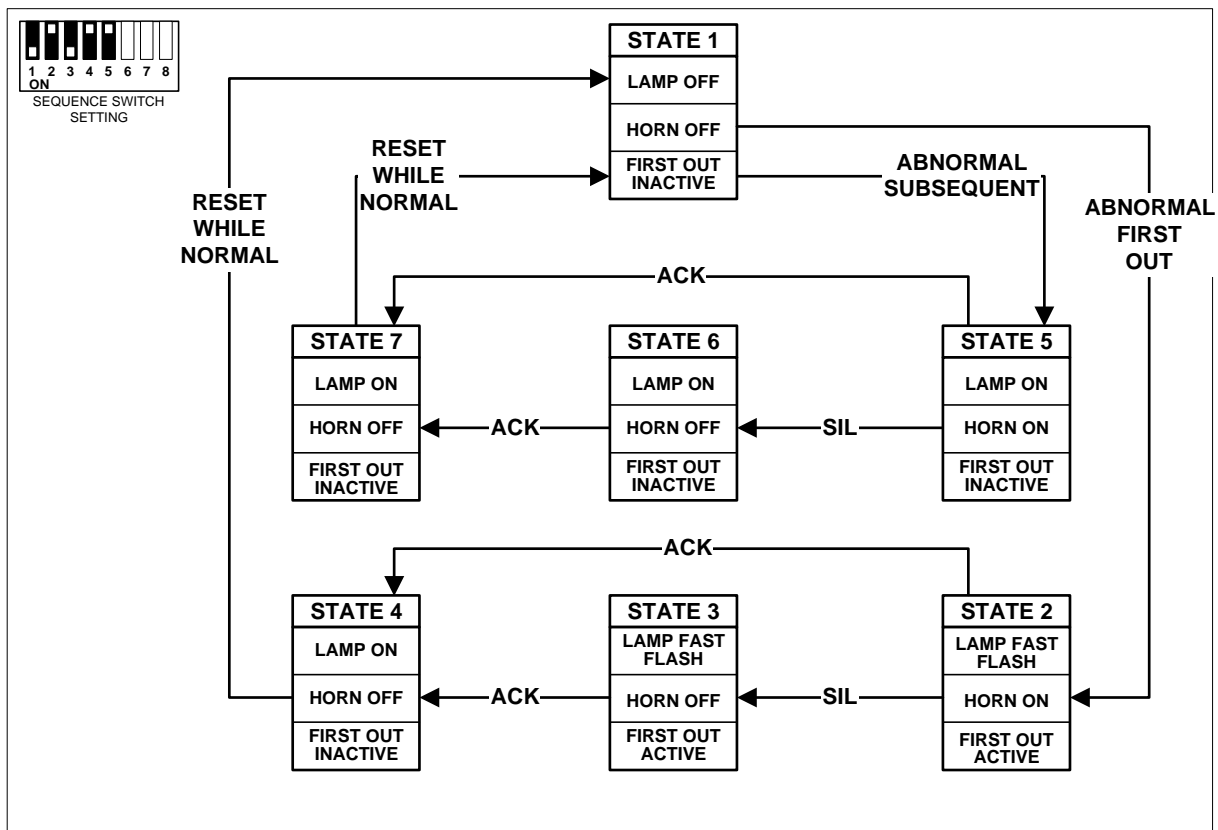
Sequence 5 - Momentary (Fleeting) Alarm, First Out Multiple Groups, Manual Reset, with Ringback.
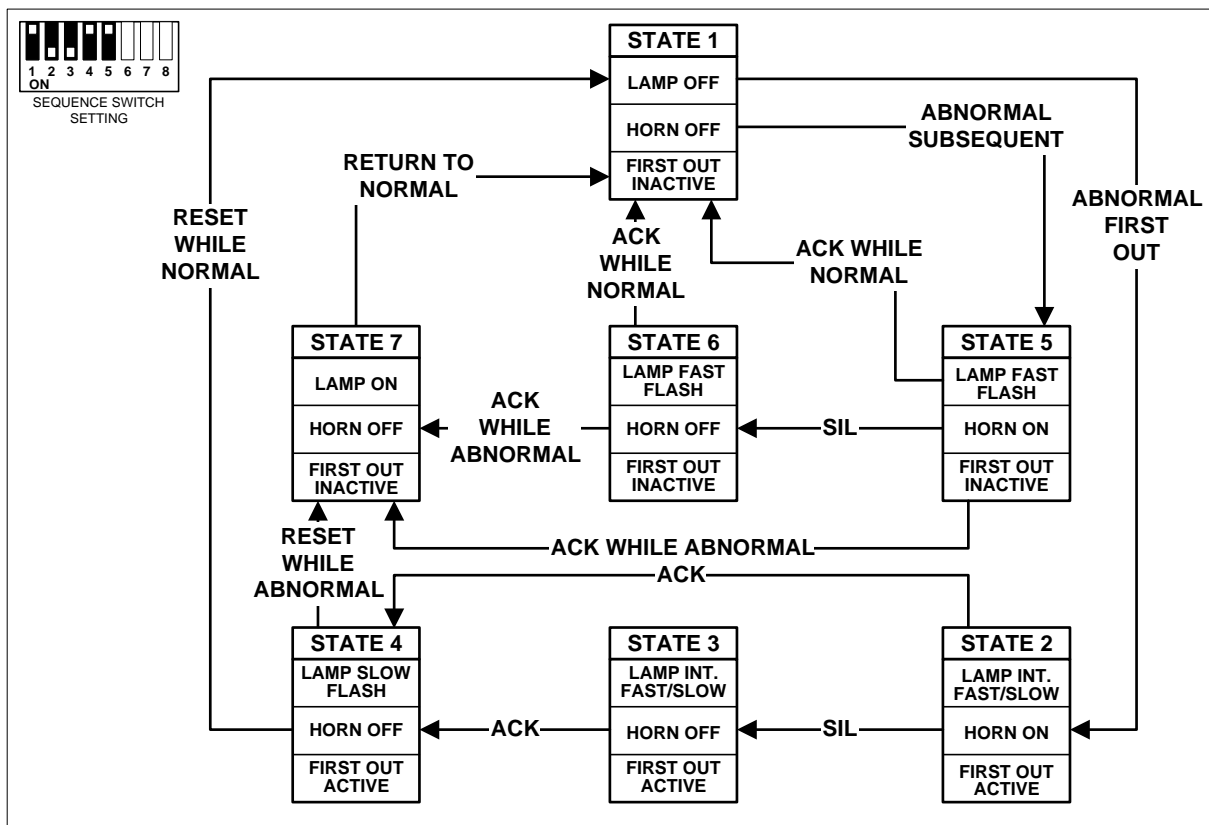
Sequence 6 - Momentary (Fleeting) Alarm, First Out Manual Reset, Auto Reset on subsequent Alarms
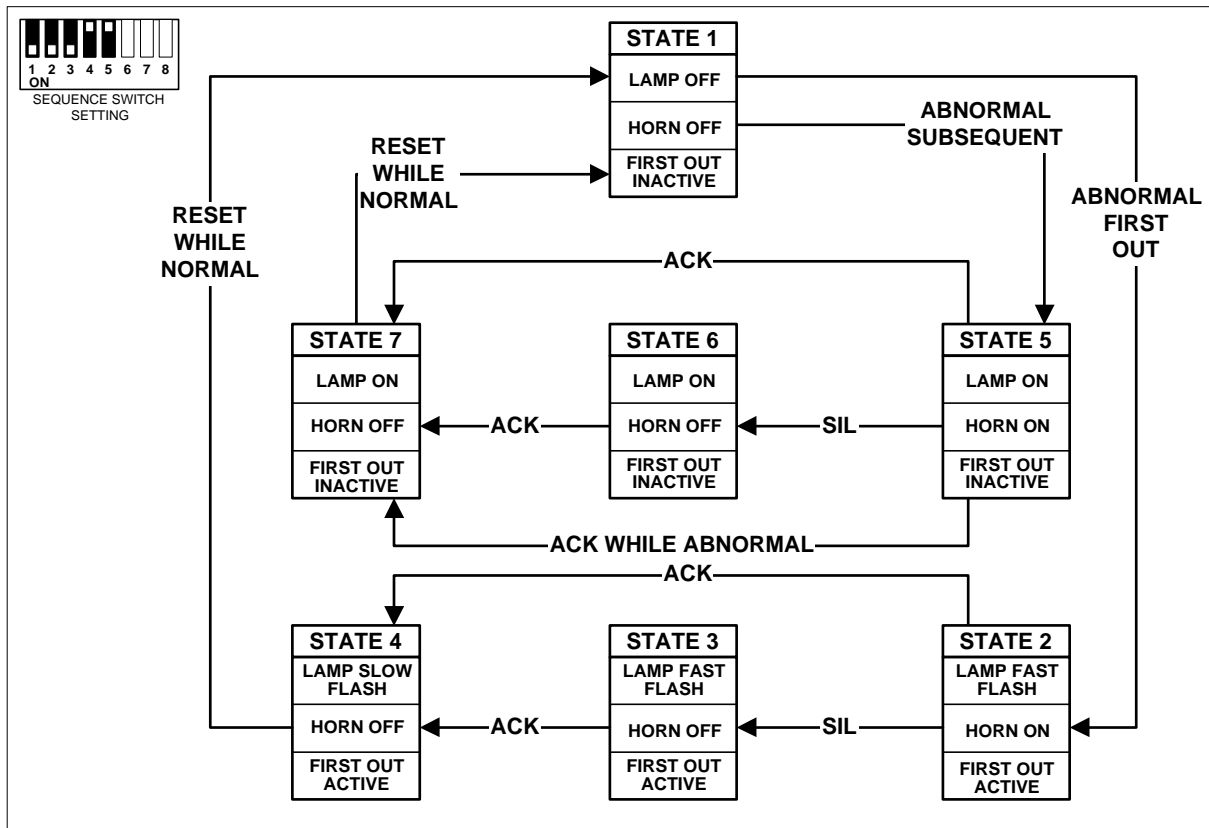
Sequence 7 - Momentary (Fleeting) Alarm, First Out Single Group, Manual Reset, First Out Continuous Flash
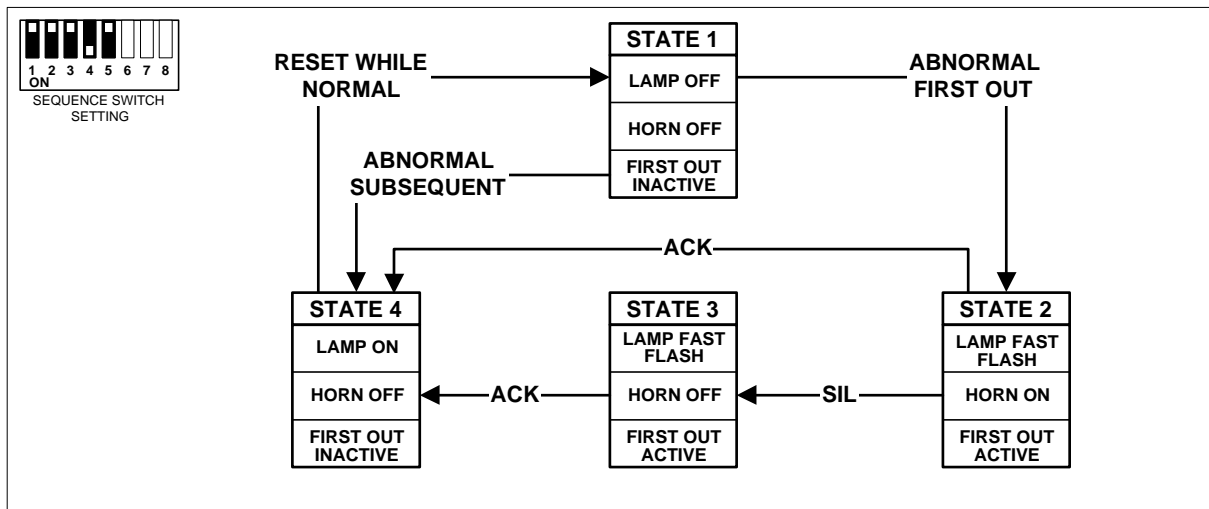
Sequence 8 - Momentary (Fleeting) Alarm; First Out Multiple Group; Manual Reset; No horn for subsequent alarms.

Sequence 9

SEQUENCE SWITCH SETTING

T

RESET WHILE NORMAL

STATE 1
LAMP OFF
HORN OFF
TIMER OFF

ABNORMAL

STATE 2
LAMP FAST FLASH
HORN ON
TIMER RUNNING

SIL

STATE 3
LAMP FAST FLASH
HORN OFF
TIMER OFF

TIME OUT

STATE 4
LAMP ON
HORN OFF
TIMER OFF

ACK

ACK
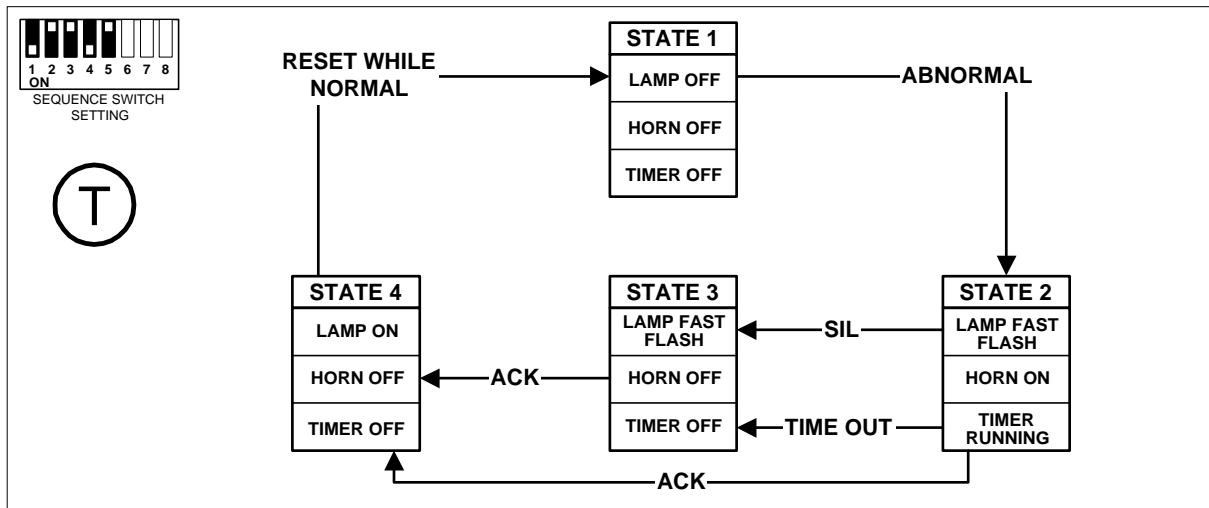
Sequence 9 - Momentary (Fleeting) Alarm; Manual Reset; Auto Silence after Time Delay.

Sequence 10

SEQUENCE SWITCH SETTING

T

RESET WHILE NORMAL

TIME OUT WHILE ABNORMAL

TIME OUT WHILE ABNORMAL

STATE 1
LAMP OFF
HORN OFF
TIMER OFF

ABNORMAL

STATE 2
LAMP FAST FLASH
HORN ON
TIMER OFF

SIL

STATE 3
LAMP FAST FLASH
HORN OFF
TIMER RUNNING

ACK

STATE 4
LAMP ON
HORN OFF
TIMER RUNNING

ACK
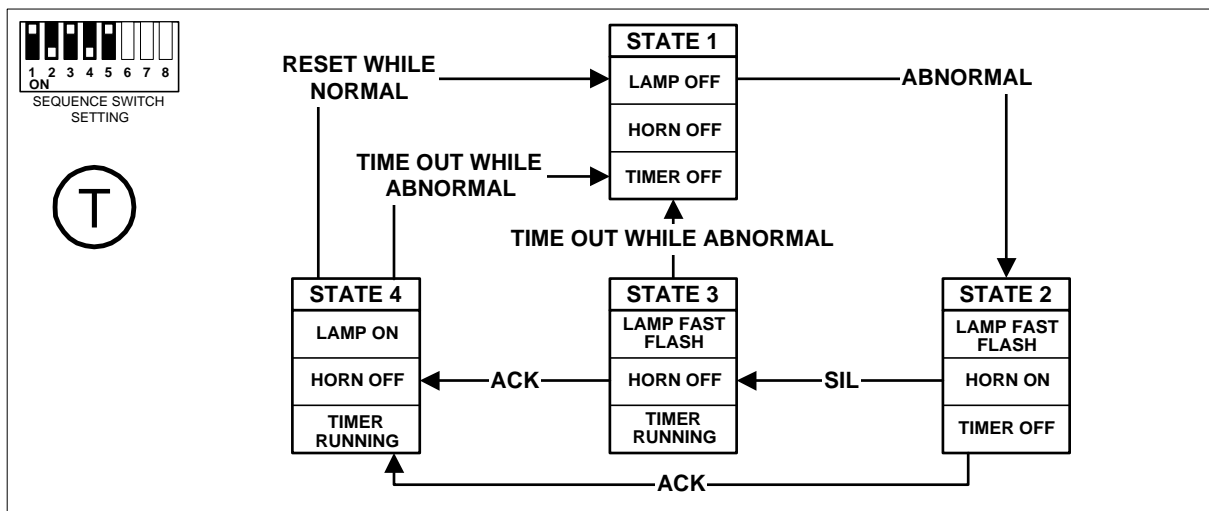
Sequence 10 - Momentary (Fleeting) Alarm; Manual Reset; Re-alarm after time-out if still abnormal.

Sequence 11

SEQUENCE SWITCH SETTING

RESET WHILE NORMAL

STATE 1
LAMP OFF
HORN OFF

ABNORMAL

STATE 2
LAMP FAST FLASH
HORN ON

SIL

STATE 3
LAMP FAST FLASH
HORN OFF

ACK

STATE 4
LAMP SLOW FLASH
HORN OFF

ACK

Sequence 11 - Momentary (Fleeting) Alarm, Manual Reset, for Motor Alarms (Timer option off)
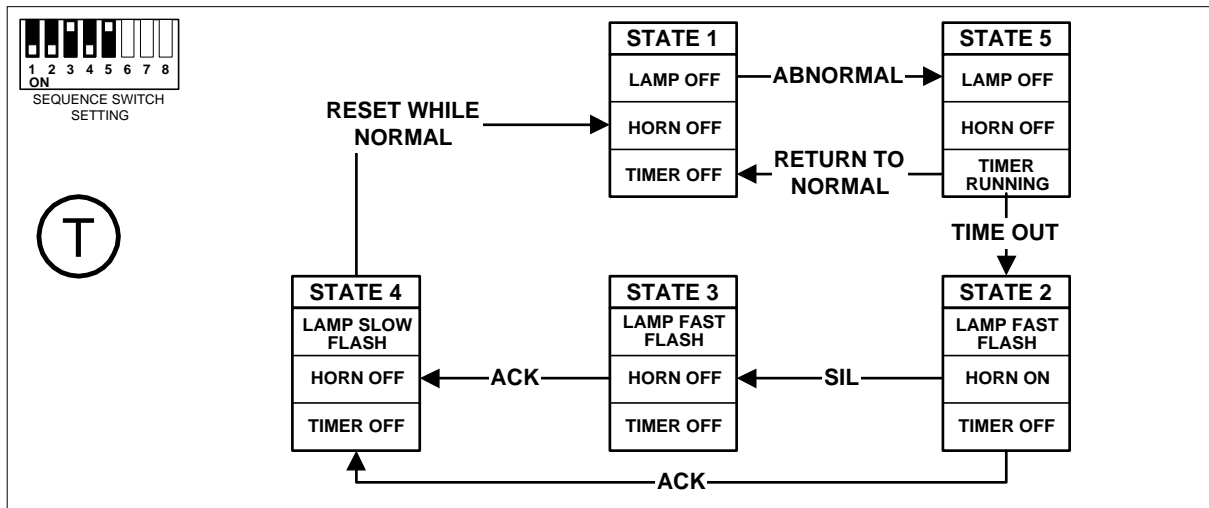
Sequence 11 - Momentary (Fleeting) Alarm; Manual Reset; for Motor Alarms; with Time Delay on Inputs
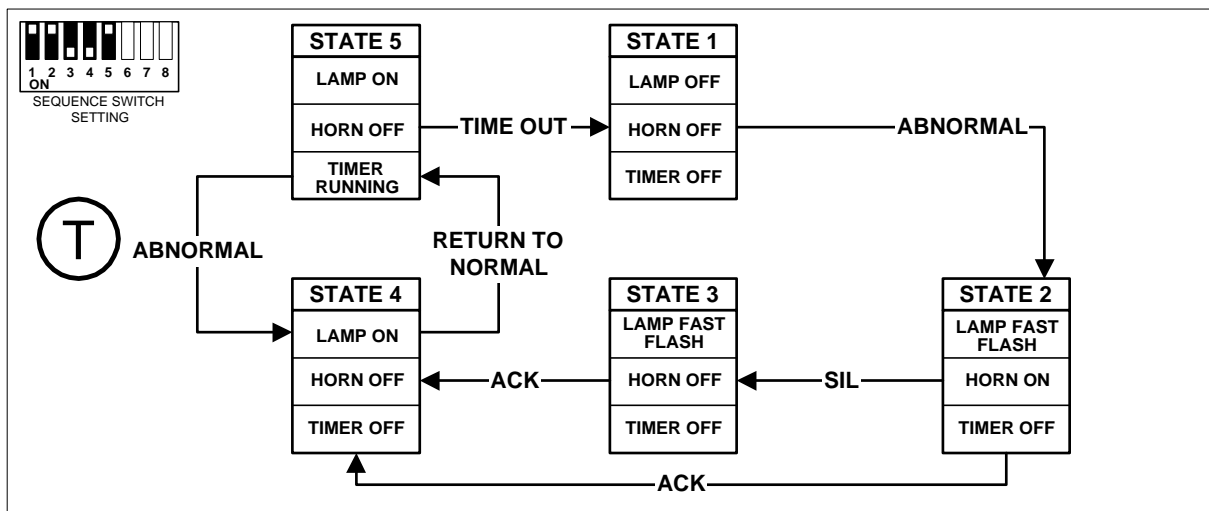
Sequence 12 - Momentary (Fleeting) Alarm; Auto Reset; with Time Delay on Return to Normal.

Sequence 13 - Pulse Monitoring Alarm, Manual Reset

Sequence 14 - Momentary (Fleeting Alarm), Manual Reset, with Ringback.
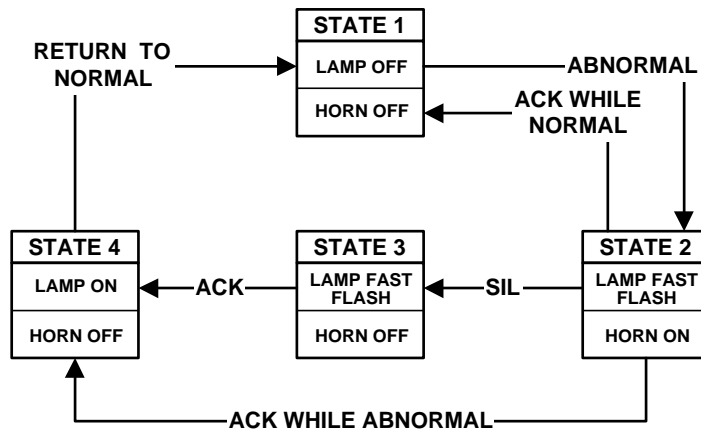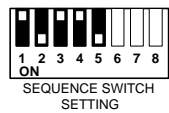
Sequence 18 - Momentary (Fleeting) Alarm, Auto Reset, (Timer option off)

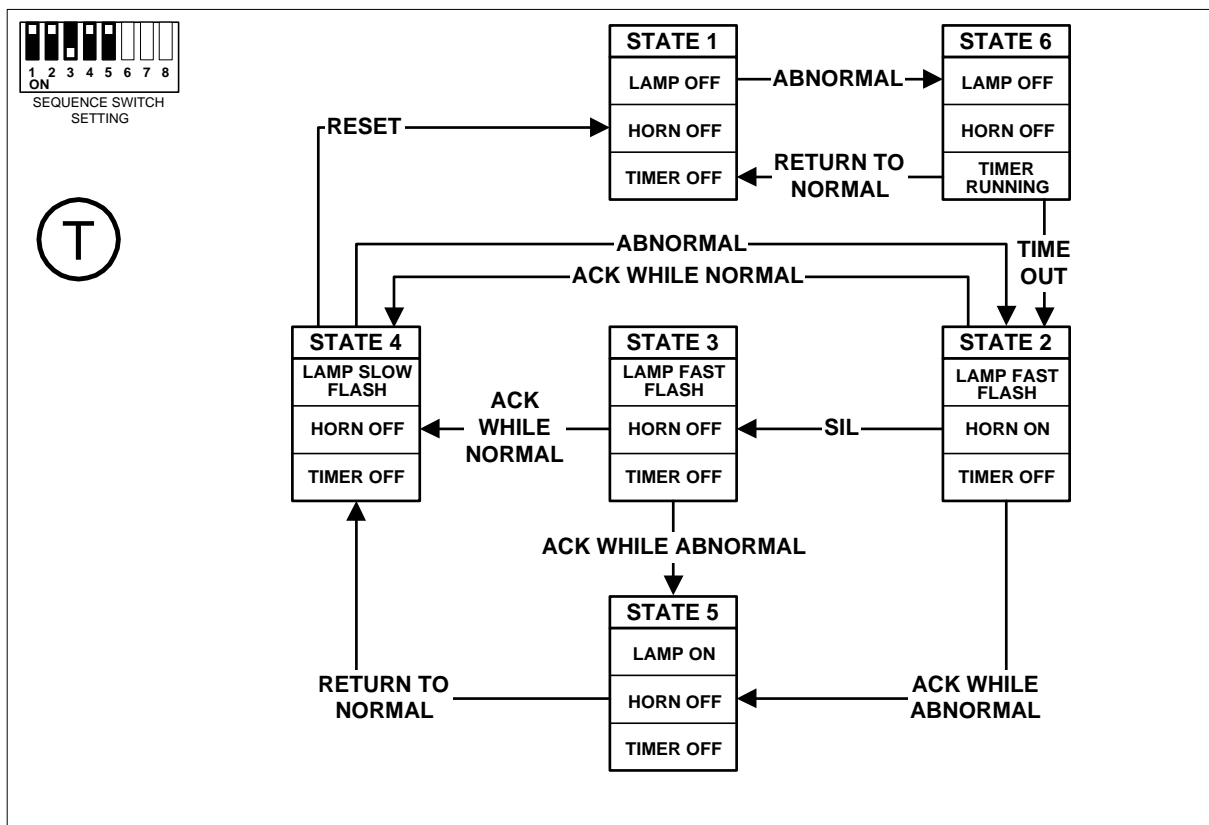Sequence 18 - Momentary (Fleeting) Alarm; Auto Reset; with Time Delay on Inputs

SEQUENCE SWITCH SETTING
1 2 3 4 5 6 7 8
ON

STATE 1
LAMP OFF
HORN OFF
FIRST OUT INACTIVE

STATE 7
LAMP ON
HORN OFF
FIRST OUT INACTIVE

STATE 6
LAMP ON
HORN OFF
FIRST OUT INACTIVE

STATE 5
LAMP ON
HORN ON
FIRST OUT INACTIVE

STATE 4
LAMP ON
HORN OFF
FIRST OUT INACTIVE

STATE 3
LAMP FAST FLASH
HORN OFF
FIRST OUT ACTIVE

STATE 2
LAMP FAST FLASH
HORN ON
FIRST OUT ACTIVE

RETURN TO NORMAL · RETURN TO NORMAL · ACK WHILE NORMAL · ABNORMAL SUBSEQUENT · ABNORMAL FIRST OUT · ACK WHILE NORMAL · ACK WHILE NORMAL · ACK WHILE ABNORMAL · SIL · ACK WHILE ABNORMAL · ACK WHILE ABNORMAL · ACK WHILE ABNORMAL · SIL

Sequence 21 - Momentary (Fleeting) Alarm, First Out Multiple Groups, Auto Reset.

SEQUENCE SWITCH SETTING
1 2 3 4 5 6 7 8
ON

STATE 1
LAMP OFF
HORN OFF
FIRST OUT INACTIVE

STATE 7
LAMP ON
HORN OFF
FIRST OUT INACTIVE

STATE 6
LAMP ON
HORN OFF
FIRST OUT INACTIVE

STATE 5
LAMP ON
HORN ON
FIRST OUT INACTIVE

STATE 4
LAMP SLOW FLASH
HORN OFF
FIRST OUT ACTIVE

STATE 3
LAMP FAST FLASH
HORN OFF
FIRST OUT ACTIVE

STATE 2
LAMP FAST FLASH
HORN ON
FIRST OUT ACTIVE

RETURN TO NORMAL · RETURN TO NORMAL · ACK WHILE NORMAL · ABNORMAL SUBSEQUENT · ABNORMAL FIRST OUT · ACK WHILE NORMAL · ACK WHILE NORMAL · ACK WHILE ABNORMAL · SIL · ACK WHILE ABNORMAL · ACK WHILE ABNORMAL · ACK WHILE ABNORMAL · SIL

Sequence 23 - Momentary (Fleeting) Alarm, First Out Single Group, Auto Reset, First Out Continous Flash.

SEQUENCE SWITCH SETTING
1 2 3 4 5 6 7 8
ON

RETURN TO NORMAL

STATE 1
LAMP OFF
HORN OFF
FIRST OUT INACTIVE

ABNORMAL FIRST OUT

ABNORMAL SUBSEQUENT

ACK WHILE NORMAL

ACK WHILE NORMAL

STATE 4
LAMP ON
HORN OFF
FIRST OUT INACTIVE

STATE 3
LAMP FAST FLASH
HORN OFF
FIRST OUT ACTIVE

STATE 2
LAMP FAST FLASH
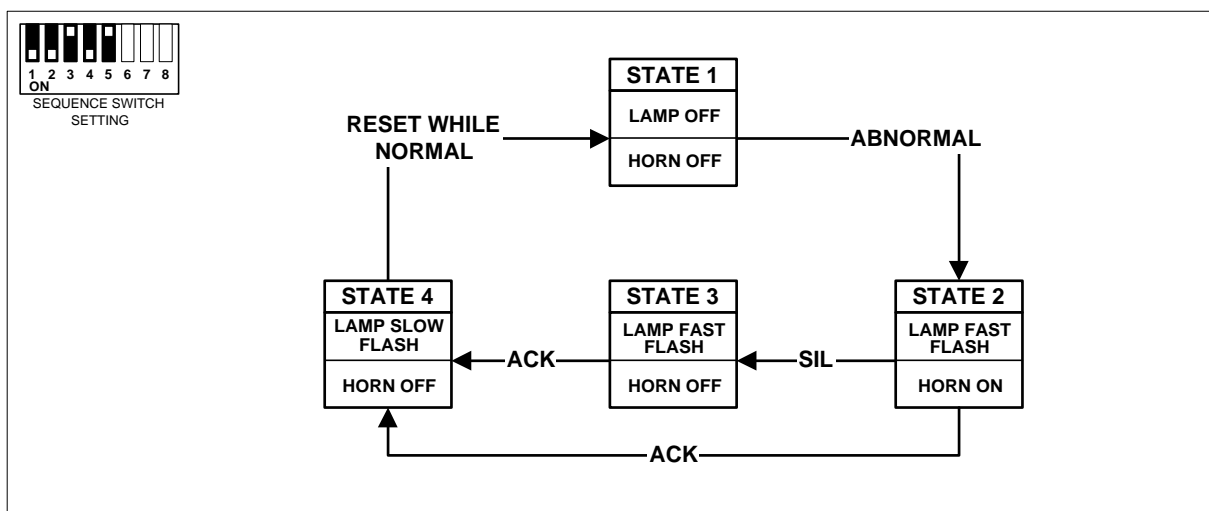HORN ON
FIRST OUT ACTIVE

ACK WHILE ABNORMAL

SIL

ACK WHILE ABNORMAL
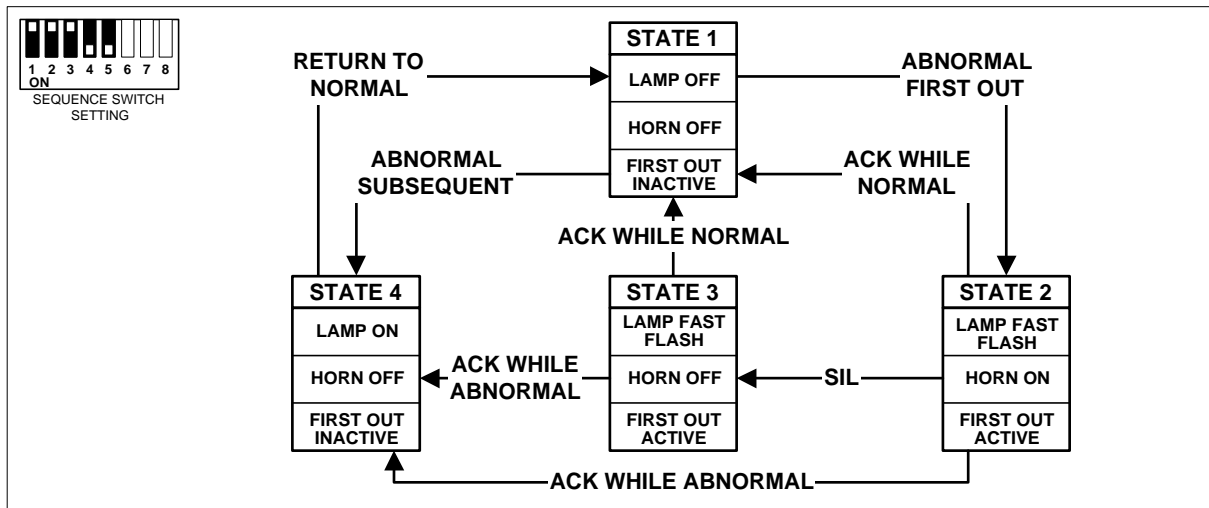
Sequence 24 - Momentary (Fleeting) Alarm; First Out Multiple Group; Auto Reset; No horn for subsequent alarms.

SEQUENCE SWITCH SETTING
1 2 3 4 5 6 7 8
ON

T

RETURN TO NORMAL

STATE 1
LAMP OFF
HORN OFF
TIMER OFF

ABNORMAL

ACK WHILE NORMAL

ACK WHILE NORMAL

STATE 4
LAMP ON
HORN OFF
TIMER OFF

STATE 3
LAMP FAST FLASH
HORN OFF
TIMER OFF

STATE 2
LAMP FAST FLASH
HORN ON
TIMER RUNNING

SIL

ACK

TIME OUT

ACK WHILE ABNORMAL
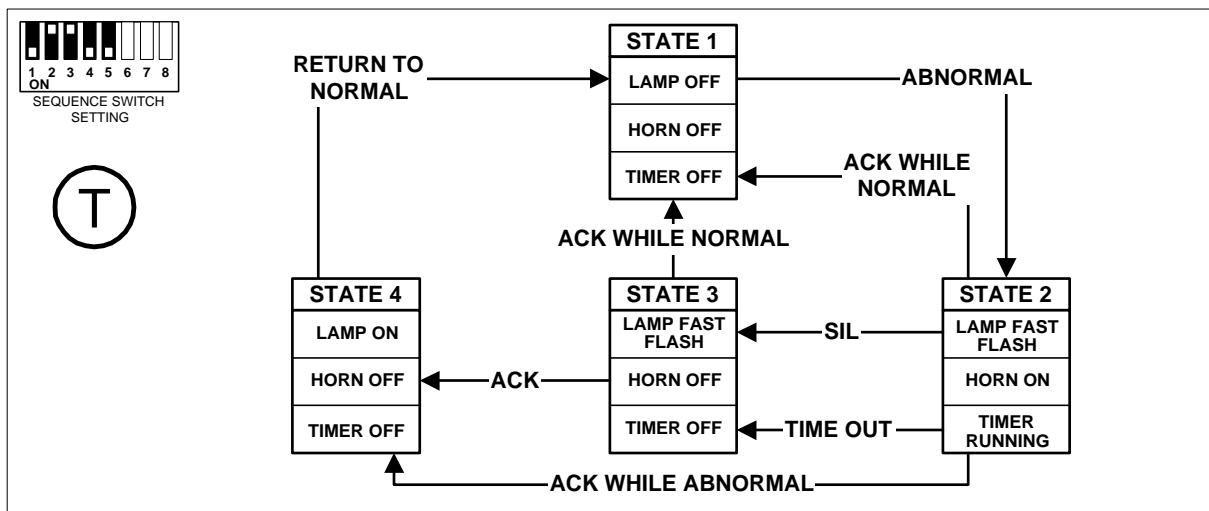
Sequence 25 - Momentary (Fleeting) Alarm; Auto Reset; Auto Silence after Time Delay.

SEQUENCE SWITCH SETTING
1 2 3 4 5 6 7 8
ON

T

RETURN TO NORMAL

STATE 1
LAMP OFF
HORN OFF
TIMER OFF

ABNORMAL

TIME OUT WHILE ABNORMAL

ACK WHILE NORMAL

TIME OUT WHILE ABNORMAL

STATE 4
LAMP ON
HORN OFF
TIMER RUNNING

STATE 3
LAMP FAST FLASH
HORN OFF
TIMER RUNNING

STATE 2
LAMP FAST FLASH
HORN ON
TIMER OFF

ACK

SIL

ACK WHILE ABNORMAL

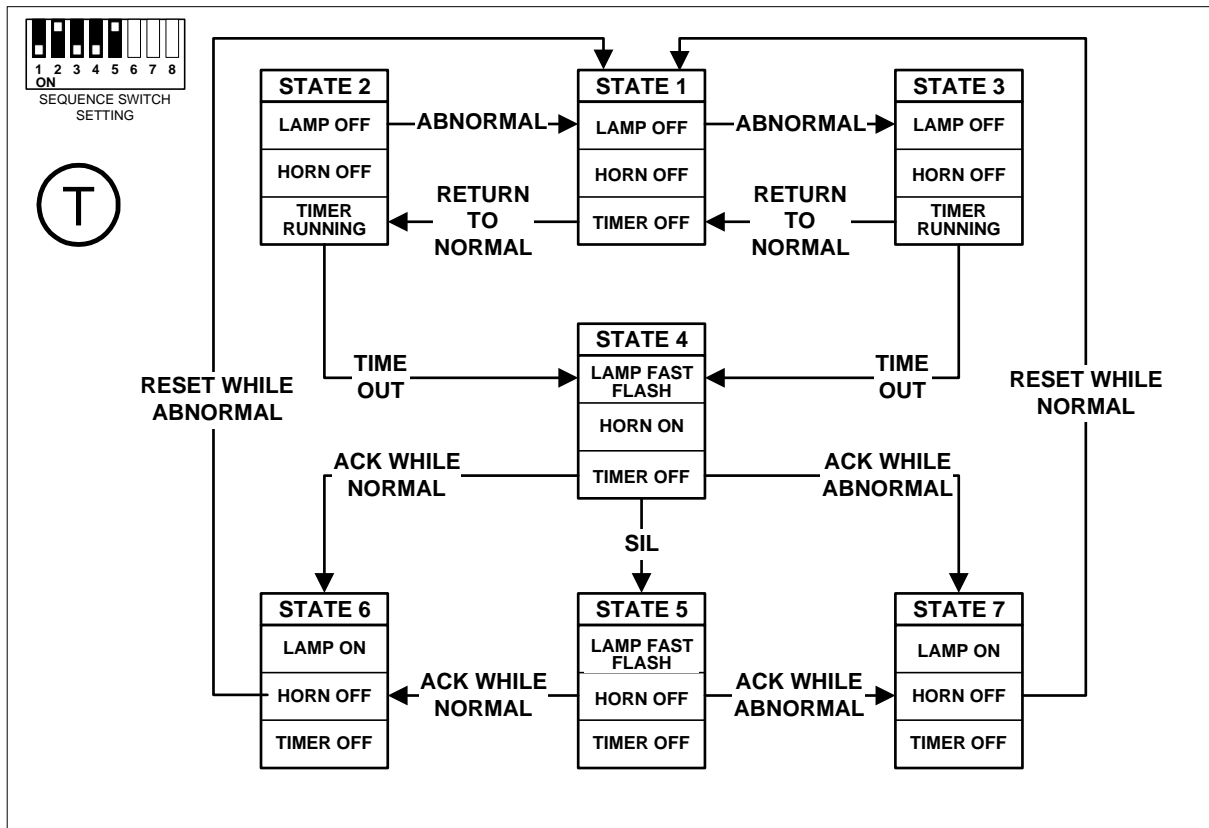Sequence 26 - Momentary (Fleeting) Alarm; Auto Reset; Re-alarm after time-out if still abnormal.
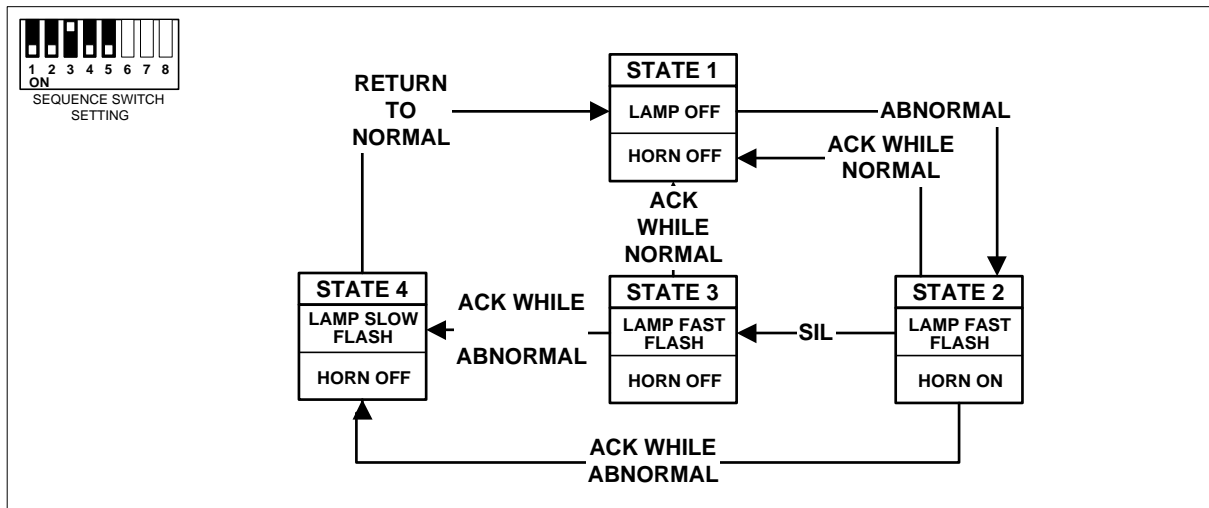
Sequence 27 - Momentary (Fleeting) Alarm, Auto Reset, for Motor Alarms (Timer option off)
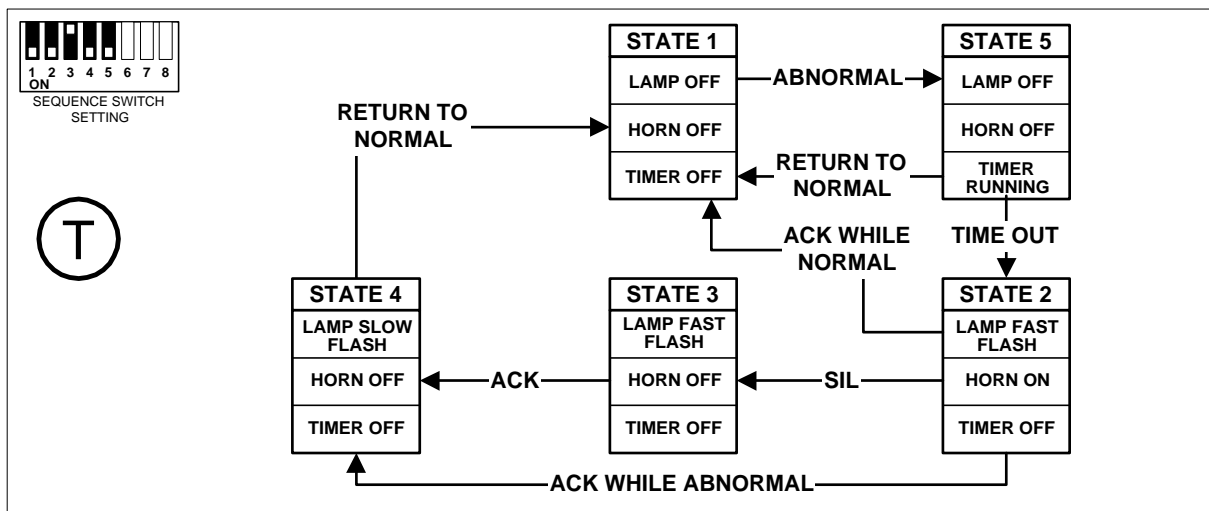
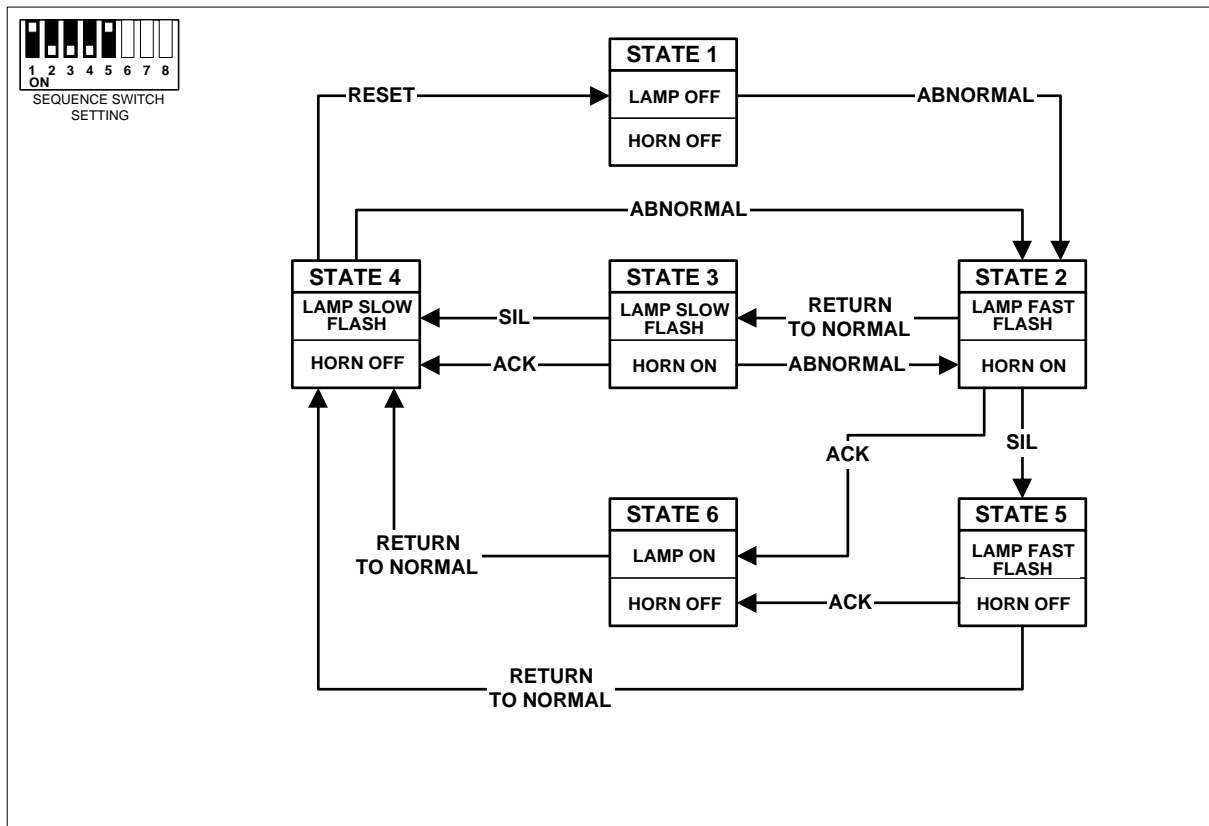Sequence 27 - Momentary (Fleeting) Alarm; Auto Reset; for Motor Alarms; with Time Delay on Inputs
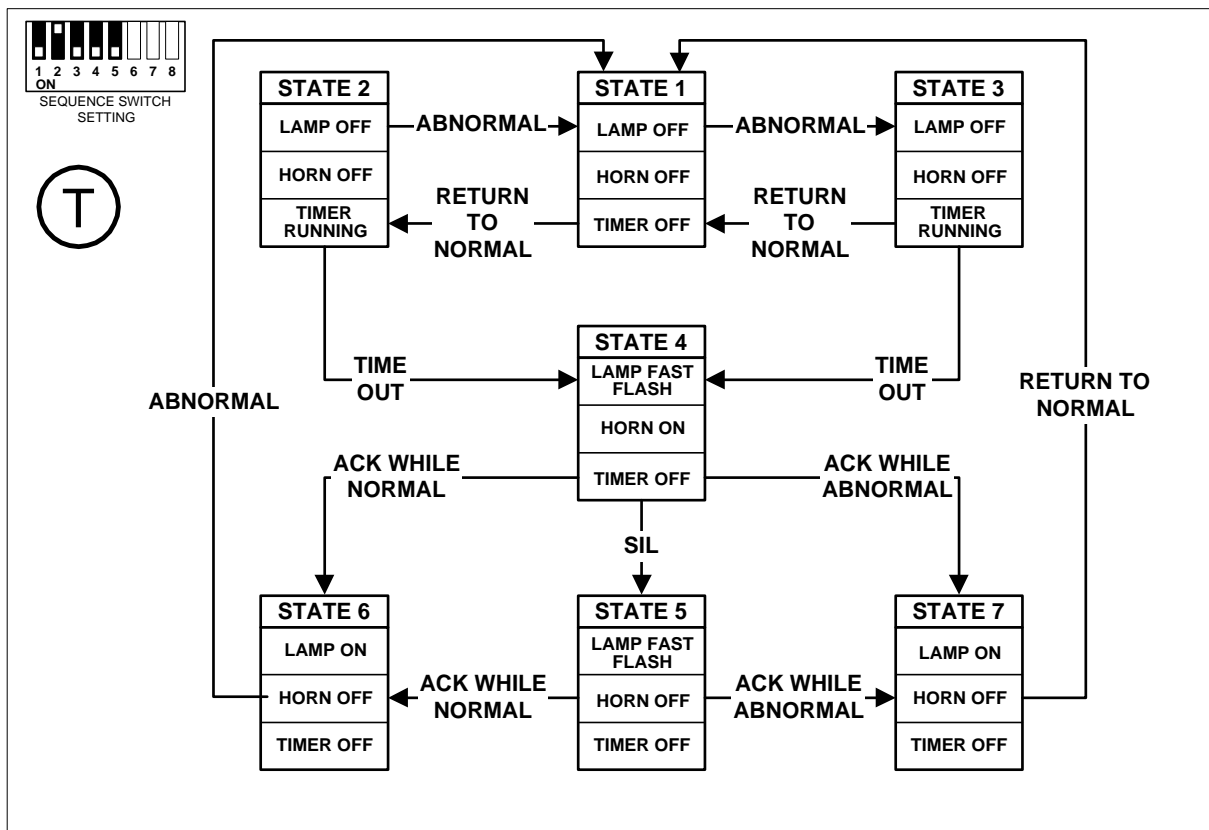
Sequence 29 - Pulse Monitoring Alarm - Auto Reset

8. MODBUS REGISTER LAYOUT

The following table provides the contents of the registers available through the programming port and the serial port using the Modbus protocol. This layout pertains to Versions of Omni16C that conform to Omni8/16C DIT Layout Version 2.00. (Omni8/16C Software Kernels V5.xx support this layout)

Omni8/16C supports the following Modbus functions:

Modbus Function 1 – Read Coil Statuses

Modbus Function 2 – Read Input Statuses

Modbus Function 3 – Read Holding Registers

Modbus Function 4 – Read Input Registers

Modbus Function 5 – Write Single Coil

Modbus Function 6 – Write Single Holding Register

Modbus Function 16 – Write Multiple Holding Registers

Note:

Maximum Number of Holding Registers to read or write: 4

16 coils or input status to be read at a time, starting from positions1,17,33,49 only.

Note that the Table below refers to Modbus Holding registers without any starting offset. If a third party Modbus Master is being used to poll the Omni8/16, add the offset for that device to the register addresses below. For example, some Modbus Master devices, Holding registers start at address 40 001. Therefore to read the status of the Omni8/16C inputs, read Holding register 40101.

 (Using the optional Configuration Software, this data is presented in easy-to-use pull-down menus enabling the data to be accessed without needing to know the specific register numbers):

Holding / Input Reg	Coil/ Input Status.	DIT No.	DESCRIPTION	Read/ Write
1-100		0-99	PRODUCT INFORMATION	
1	N/A	0	Product Code Product Code that reflects the product range/ family. For the Omni8/16C family, the product code is 0501.	R
2	N/A	1	DIT Revision Number Version number of the DIT Layout used by the Omni8/16C Kernel. The formal is BCD with major revision number in the MSB and minor revision in the LSB.	R
3	N/A	2	Kernel Version Number Version number of the Omni8/16C Kernel. The value is stored in BCD format with major revision number in the MSB and minor revision in the LSB.	R
4	N/A	3	Supported Services Flags This register shows what network related services are supported by the Omni8/16C Kernel: Bit 0: DIT service Bit 1,2: Reserved Bit 3: Datagram Service Bits 4,5: Reserved Bit 6: Programming Service Bit 7: Presentation Layer Management Service Bits 8-15: Reserved The Omni8/16C currently supports the DIT service. The value read is 1.	R
5	N/A	4	User Tag 1 Name or Model number of the product in ASCII format, 2 characters per register.	R
6	N/A	5	User Tag 2	R
7	N/A	6	User Tag 3	R
8	N/A	7	User Tag 4	R

Holding / Input Reg	Coil/ Input Status.	DIT No.	DESCRIPTION	Read/ Write
9 - 23	N/A	8 – 22	Reserved	
24	N/A	23	Alive Counter Counter incremented frequently by the Omni8/16C Kernel to indicate it is running.	R
25 – 100	N/A	24-99	Reserved	
101- 200		100-199	STATUS DATA	

101	1-16	100	Input Status
			16 Inputs as individual bits – bit 0 (lsb) = input 1 etc. Note that any Change of State to "1" will remain latched until read by a Modbus Poll. This will ensure that any fleeting abnormal input is never missed by the Modbus Master.
			These status bits can also be written to the unit for serial display.
			When using Modbus Coil writes (Modbus Function 5) the coil mapping is as follows:
			Coil Number : Input Number
			      1 : 1
			      2 : 2
			      3 : 3
			      4 : 4
			      5 : 5
			      6 : 6
			      7 : 7
			      8 : 8
			      9 : 9
			    10 : 10
			    11 : 11
			    12 : 12
			    13 : 13
			    14 : 14
			    15 : 15
			    16 : 16
				R/W

Holding / Input Reg	Coil/ Input Status.	DIT No.	DESCRIPTION	Read/ Write

102	17-32	101	Common Service Input Status
			If any bit below is 1 then the input is ON.
			Bit 0: INH (Inhibit input)
			Bit 1: TST (Lamp Test input)
			Bit 2: ACK (Acknowledge input)
			Bit 3: SIL (Silence input)
			Bit 4: RES (Reset input)
			Bit 5: FS (Flash Sync input - this bit is READ ONLY)
			Bit 6: FO (First Out input - this bit is READ ONLY)
			Bits 7-15: Reserved
			NOTE: The SIL, ACK and RES bits are automatically reset to 0 after 3 seconds when set by the Modbus Master. All other bits must be reset by the Modbus Master.
			When using Modbus Coil writes (Modbus Function 5) the coil mapping is as follows:
			Coil Number : Control Input
			    17 : INH (Inhibit input)
			    18 : TST (Lamp Test input)
			    19 : ACK (Acknowledge input)
			    20 : SIL (Silence input)
			    21 : RES (Reset input)
			    22-32 : Reserved
				R/W

103	N/A	102	Alarm Status 1 bit for every input where "1" means the input is in alarm and "0" means the input is in the normal condition. Bit 0 (lsb) = alarm status of input 1.	R
104	N/A	103	Common Service Output Status If any bit below is 1 then the output Relay is energised Bit 0: RL1 – Relay 1 output Bit 1: RL2 – Relay 2 output Bit 2: RL2 – Relay 3 output Bit 3: RL2 – Relay 4 output Bits 4-15: Reserved	R
105	N/A	104	Lamp Status: Lamp 2 (high byte) : Lamp 1 (low byte) The current lamp status for a given lamp can be read or written to here. Status for two lamps is provided per Modbus register, one lamp per byte. Status is as follows:	R/W

Holding / Input Reg	Coil/ Input Status.	DIT No.	DESCRIPTION	Read/ Write
			0 = OFF 8 = FAST FLASH 16 = SLOW FLASH 24 = INTERMITTENT FAST FLASH 56 = STEADY ON	
106	N/A	105	Lamp Status: Lamp 4 (high byte) : Lamp 3 (low byte)	R/W
107	N/A	106	Lamp Status: Lamp 6 (high byte) : Lamp 5 (low byte)	R/W
108	N/A	107	Lamp Status: Lamp 8 (high byte) : Lamp 7 (low byte)	R/W
109	N/A	108	Lamp Status: Lamp 10 (high byte) : Lamp 9 (low byte)	R/W
110	N/A	109	Lamp Status: Lamp 12 (high byte) : Lamp 11 (low byte)	R/W
111	N/A	110	Lamp Status: Lamp 14 (high byte) : Lamp 13 (low byte)	R/W
112	N/A	111	Lamp Status: Lamp 16 (high byte) : Lamp 15 (low byte)	R/W
113-115	N/A	112 – 114	Reserved	
116	N/A	115	Fault Status If the unit discovers a fault it is reflected in this register. The error codes are as follows: NO fault found: 0 INPUT fault: 47 SPI fault: 63 EEPROM fault: 79	R
117-200	N/A	116 – 199	Reserved	
201-250		200 – 249	SETUP DATA	
201	N/A	200	Setup Sequence Number: Input 2 (high byte) : Input 1 (low byte) Select Sequence number from Table 4-1. DIP switches must be set to Sequence 31 on SW1 for this register to be recognised, otherwise the DIP switch setting is used. If an invalid setting is written into these registers, the relevant sequence is set to Sequence 1.	R/W
202	N/A	201	Setup Sequence Number: Input 4 (high byte) : Input 3 (low byte)	R/W
203	N/A	202	Setup Sequence Number: Input 6 (high byte) : Input 5 (low byte)	R/W

Holding / Input Reg	Coil/ Input Status.	DIT No.	DESCRIPTION	Read/ Write
204	N/A	203	Setup Sequence Number: Input 8 (high byte) : Input 7 (low byte)	R/W
205	N/A	204	Setup Sequence Number: Input 10 (high byte) : Input 9 (low byte)	R/W
206	N/A	205	Setup Sequence Number: Input 12 (high byte) : Input 11 (low byte)	R/W
207	N/A	206	Setup Sequence Number: Input 14 (high byte) : Input 13 (low byte)	R/W
208	N/A	207	Setup Sequence Number: Input 16 (high byte) : Input 15 (low byte)	R/W
209	N/A	208	Setup Timer Setting: Input 2 (high byte) : Input 1 (low byte) Input delay timer set per input. One input per byte. The data format for an input is as follows: Most significant bit: 1 = Use the slow timer, 0 = Use the fast timer (1/10 s) Least significant 7 bits: time delay in multiples The fast timer counts time in units of tenths of a second (i.e. 1/10 s). The slow timer counts in multiples of the fast timer and is programmable. Refer to DIT 135 to configure it. The default setting is 10 which makes is a seconds counter. Fast timer example: To delay Input 1 by 20 seconds, enter 200 (or C8 hex) Slow timer example: If DIT 135 is set to 10 then to delay Input 1 by 20 seconds, enter 148 (94hex) Set to **255** to use timer setting set by SW2.	R/W
210	N/A	209	Setup Timer Setting: Input 4 (high byte) : Input 3 (low byte)	R/W
211	N/A	210	Setup Timer Setting: Input 6 (high byte) : Input 5 (low byte)	R/W
212	N/A	211	Setup Timer Setting: Input 8 (high byte) : Input 7 (low byte)	R/W
213	N/A	212	Setup Timer Setting: Input 10 (high byte) : Input 9 (low byte)	R/W
214	N/A	213	Setup Timer Setting: Input 12 (high byte) : Input 11 (low byte)	R/W
215	N/A	214	Setup Timer Setting: Input 14 (high byte) : Input 13 (low byte)	R/W
216	N/A	215	Setup Timer Setting: Input 16 (high byte) : Input 15 (low byte)	R/W
217-219	N/A	216-227	Reserved	
229	N/A	228	Setup Lamp Sense 65535 = All Lamps Normal Sense. 0 = All Lamps Reversed Sense. **Note:** This setting only applies when SW1-8 is ON.	R/W

Holding / Input Reg	Coil/ Input Status.	DIT No.	DESCRIPTION	Read/ Write
230	N/A	229	**First Out Group Split** Enter a number between 1 and 16 to decide the split between First Out Group 1 and 2. For example: A value of **4** will arrange input 1 to 4 into First Out Group 1 and inputs 5 to 16 into First Out Group 2.	R/W

231	N/A	230	**Setup System Operation**
			Bit 0: Pushbutton Edge/#Level:
			     1 – Edge, 0 – Level
			Bit 1: Auto ACK on Startup:
			     1 – NO Auto ACK on Startup, 0 - Auto ACK on Startup
			Bit 2: Inhibit Input operation:
			     1 – Close to Inhibit, 0 – Open to Inhibit
			     Note: This setting only applies when SW1-8 is ON.
			Bit 3-5: Repeat Output operation:
			     The bit map is as follows:
			     Bit 5:4:3: 1:1:1 – Repeat Relay Follows Input, Normally Open
			     Bit 5:4:3: 1:0:1 – Repeat Relay Follows Input, Normally Closed
			     Bit 5:4:3: 1:1:0 – Repeat Relay Follows Alarm, Normally Open
			     Bit 5:4:3: 1:0:0 – Repeat Relay Follows Alarm, Normally Closed
			     Bit 5:4:3: 0:0:0 – Repeat Relay Acts as GA
			Bit 6-15: Reserved
				R/W

232	N/A	231	**Setup Slow Timer** The slow timer counts in multiples of the fast timer. This is configurable to allow the most flexible use of timers. Some examples are given below: To count in seconds: set to 10 To count in 10s of seconds: set to 100 To count in 20s of seconds: set to 200	R/W

Holding / Input Reg	Coil/ Input Status.	DIT No.	DESCRIPTION	Read/ Write
233	N/A	232	Setup Common Relay Operation: Common Relay 1 (high byte) : Common Relay 2 (low byte) Configure the operation of the four common fitted to the Common Services Card, labled RL1, RL2, RL3 and RL4. These relays can be configured for Horn operation or a selection of GA (Group Alarm) operations as follows: ▪ Relay Follows Input: ▪ Relay Follows Alarm ▪ Relay acts as ring-back horn ▪ Relay acts as Multiple Reflash ▪ Relay Follows ACK pushbutton NOTE: Relay 1 can also be configured for watchdog operation.	R/W
234	N/A	233	Setup Common Relay Operation: Common Relay 3 (high byte) : Common Relay 4 (low byte)	R/W
235-236	N/A	234-235	Reserved	R/W
237	N/A	236	Setup Repeat Relay GA Operation: Repeat Relay 1 (high byte) : Repeat Relay 2 (low byte) Configure the operation of the repeat relays fitted to the Repeat Relay cards when they have been configured for "Acts as GA" operation in the Setup System Operation group. In this case the relays can be configured for Horn operation or a selection of GA (Group Alarm) operations as follows: ▪ Relay Follows Input ▪ Relay Follows Alarm ▪ Relay acts as ring-back horn ▪ Relay acts as Multiple Reflash ▪ Relay Follows ACKnowledge pushbutton	
238	N/A	237	Setup Repeat Relay GA Operation: Repeat Relay 3 (high byte) : Repeat Relay 4 (low byte)	R/W

Holding / Input Reg	Coil/ Input Status.	DIT No.	DESCRIPTION	Read/ Write
239	N/A	238	Setup Repeat Relay GA Operation: Repeat Relay 5 (high byte) : Repeat Relay 6 (low byte)	R/W
240	N/A	239	Setup Repeat Relay GA Operation: Repeat Relay 7 (high byte) : Repeat Relay 8 (low byte)	R/W
241	N/A	240	Setup Repeat Relay GA Operation: Repeat Relay 9 (high byte) : Repeat Relay 10 (low byte)	R/W
242	N/A	241	Setup Repeat Relay GA Operation: Repeat Relay 11 (high byte) : Repeat Relay 12 (low byte)	R/W
243	N/A	242	Setup Repeat Relay GA Operation: Repeat Relay 13 (high byte) : Repeat Relay 14 (low byte)	R/W
244	N/A	243	Setup Repeat Relay GA Operation: Repeat Relay 15 (high byte) : Repeat Relay 16 (low byte)	R/W
245	N/A	244	Setup Common Relay Input Members: Relay 1 Configures the group of inputs that the relay will respond to. Inputs are individually mapped to any relay. Mapping is setup in binary format where Input 1 is the least significant bit. For example: to map inputs 1 to 6 to Common Relay 1, set the corresponding binary value: "0000000000111111" for DIT register 244.	R/W
246	N/A	245	Setup Common Relay Input Members: Relay 2	R/W
247	N/A	246	Setup Common Relay Input Members: Relay 3	R/W
248	N/A	247	Setup Common Relay Input Members: Relay 4	R/W
249	N/A	248	Setup Repeat Relay Input Members: Repeat Relay 1 Configures the group of inputs that the repeat relay will respond to. Inputs are individually mapped to any relay. Mapping is setup in binary format where Input 1 is the least significant bit. For example: to map inputs 1 to 6 to Repeat Relay 1, set the corresponding binary value: "0000000000111111" for DIT register 248. NOTE: the function will only apply if the Repeat Relays have been setup to "Act as GA" in the System Operation setup.	R/W
250	N/A	249	Setup Repeat Relay Input Members: Repeat Relay 2	R/W
251	N/A	250	Setup Repeat Relay Input Members: Repeat Relay 3	R/W
252	N/A	251	Setup Repeat Relay Input Members: Repeat Relay 4	R/W
253	N/A	252	Setup Repeat Relay Input Members: Repeat Relay 5	R/W

Holding / Input Reg	Coil/ Input Status.	DIT No.	DESCRIPTION	Read/ Write
254	N/A	253	Setup Repeat Relay Input Members: Repeat Relay 6	R/W
255	N/A	254	Setup Repeat Relay Input Members: Repeat Relay 7	R/W
256	N/A	255	Setup Repeat Relay Input Members: Repeat Relay 8	R/W
257	N/A	256	Setup Repeat Relay Input Members: Repeat Relay 9	R/W
258	N/A	257	Setup Repeat Relay Input Members: Repeat Relay 10	R/W
259	N/A	258	Setup Repeat Relay Input Members: Repeat Relay 11	R/W
260	N/A	259	Setup Repeat Relay Input Members: Repeat Relay 12	R/W
261	N/A	260	Setup Repeat Relay Input Members: Repeat Relay 13	R/W
262	N/A	261	Setup Repeat Relay Input Members: Repeat Relay 14	R/W
263	N/A	262	Setup Repeat Relay Input Members: Repeat Relay 15	R/W
264	N/A	263	Setup Repeat Relay Input Members: Repeat Relay 16	R/W
265	N/A	264	Setup Modbus Extended Slave Address When the Modbus address switch is set to 15, then the alarm annunciators will use the setting in this register to determine its Modbus Slave Address. Bits 0-7: Modbus Extended Slave Address: Can be in the range 1-255 Bit 8-15: Reserved. Set to zero when writing to this register.	